

THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS



The FHA and Mortgage Lending Policy
FREDERICK M. BABCOCK

Utility Construction and Demand for Power
WENTWORTH W. PEIRCE

Public Utility Refunds
FLOYD R. SIMPSON

Diminishing Returns in the Mining Industry
WARREN ROBERTS

Nebraska's Public Power Districts
WILLIAM F. KENNEDY

Chicago Real Estate Bonds
GENEVIEVE KOESTER

Defaulted Railroad Liens
WILLIAM H. MOORE

Reflections on the Single Tax
ROBERT B. PETTENGILL

DEPARTMENTS: Non-Conforming Uses Destroy the Neighborhood—HARLAND BARTHOLOMEW; California's Subdivision Control Sustained—HELEN C. MONCHOW; New Weed Control Laws—H. A. HOCKLEY; Mobility and Farm Tenure—J. A. BAKER; Consolidated Edison Labor Decision—CHARLES F. MARSH; Obsolescence of Turbo-Generators—WILLIAM A. DITTMER; The Report on the Transportation Situation—D. PHILIP LOCKLIN.

ECONOMICA

ECONOMICA is issued quarterly by the London School of Economics & Political Science in February, May, August and November. It publishes the results of original researches into all the aspects of Economics, Economic History and Statistics, and receives contributions from leading British, American and Continental economists. After eighteen years constant growth and expansion the Journal has made itself practically indispensable to progressive teachers and students of economics and is increasingly read and appreciated by those engaged in public undertakings throughout the world.

ANNUAL SUBSCRIPTION: 15s

Single copies, 4s. 6d, post free

Subscriptions and enquiries should be addressed to the Publications Dept., London School of Economics, Houghton St., Aldwych, London W. C. 2., England.

AMERICAN ECONOMIC ASSOCIATION

THE American Economic Association has as its purpose the encouragement of economic research, especially the historical and statistical study of the actual conditions of industrial life, the issue of publications on economic subjects, and the encouragement of perfect freedom of economic discussion. The Association as such takes no partisan attitude, nor will it commit its members to any position on practical economic questions.

Membership entitles one to receive the *American Economic Review* and the proceedings of the annual meetings.

ANNUAL MEMBERSHIP - \$5.00

LIFE MEMBERSHIP - \$200.00

Applications for membership should be sent to:

The Secretary,
AMERICAN ECONOMIC ASSOCIATION
Northwestern University, Evanston, Illinois

THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

CONTENTS

FEBRUARY, 1939

Influence of the Federal Housing Administration on Mortgage Lending Policy.....	FREDERICK M. BABCOCK...	1
The Response of New Construction in the Electric Utility Industry to the Demand for Power.....	WENTWORTH W. PEIRCE...	6
Public Utility Refunds: A Study of Regulatory Ineffectiveness.....	FLOYD R. SIMPSON.....	12
Diminishing Returns in the Mining Industry.....	WARREN ROBERTS.....	21
The Nebraska Public Power Districts.....	WILLIAM F. KENNEDY....	29
Chicago Real Estate Bonds, 1919-1938: I. Corporate History.....	GENEVIEVE KOESTER....	49
Assignment of Relative Values to Defaulted Divisional Liens.....	WILLIAM H. MOORE.....	59
Reflections on the Single Tax: In Light of the California Plan of 1938.....	ROBERT B. PETTENGILL...	68
The Winnipeg Municipal Electric Utility: II. Financial History and General Conclusions.....	LAWRENCE S. DREIMAN...	76

DEPARTMENTS

<i>Urban Land</i>		
Non-Conforming Use and the City Plan.....	PAUL OPPERMAN.....	94
Non-Conforming Uses Destroy the Neighborhood...	HARLAND BARTHOLOMEW..	96
California's Subdivision Control Sustained.....	HELEN C. MONCHOW....	97
<i>Land Resources</i>		
Recently Enacted Weed Control Legislation.....	H. A. HOCKLEY.....	99
Mobility and Farm Tenancy—A Rejoinder.....	J. A. BAKER.....	102
<i>Public Utilities</i>		
The Consolidated Edison Labor Decision.....	CHARLES F. MARSH.....	105
Public Utility Financing in the Fourth Quarter and the Year, 1938.....	E. D. OSTRANDER.....	108
Notes on the Determination of Obsolescence of Turbo-Generators in Rate-Case Valuations.....	WILLIAM A. DITTMER....	115
Report of the President's Committee on the Transportation Situation.....	D. PHILIP LOCKLIN.....	117
<i>Book Reviews</i>		120

PUBLISHED QUARTERLY BY NORTHWESTERN UNIVERSITY
DURING THE MONTHS OF FEBRUARY, MAY, AUGUST, AND NOVEMBER

Publication office: 450 Ahnaip St., Menasha, Wis.

Editorial and General offices: Northwestern University, School of Commerce, 337 East Chicago Ave., Chicago, Ill.
The contents of the *Journal* are indexed in the *Industrial Arts Index*.

Entered as second-class matter, January 3, 1938, at the post-office at Menasha, Wis., under the Act of March 3, 1879. Additional entry at Chicago, Illinois. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized October 12, 1922. Printed in the United States of America.

Subscription Rates: \$5 a year; \$1.25 a copy. Remittances may be made by personal checks, drafts, post-office or express money orders, payable to the Journal of Land & Public Utility Economics.

Agents of the *Journal* in Great Britain, B. F. Stevens & Brown,

Ltd., 28-30 Little Russell St., British Museum, London, W. C. 1.

Copyright: Contents of this issue are covered by copyright, 1939, by Northwestern University. Copyright, 1939, in Great Britain.

Advertising rates furnished on application.

THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

Founded by RICHARD T. ELY

Published by Northwestern University

BOARD OF EDITORS

PAUL JEROME RAVER, *Chairman*
Associate Professor of Public Utilities, Northwestern University; Executive Officer, Illinois Commerce Commission.

MORTON BODFISH
Formerly Member, Federal Home Loan Bank Board; Executive Vice President, United States Building and Loan League; Associate Professor of Land Economics, Northwestern University.

FREDERICK S. DEIBLER
Professor of Economics, Northwestern University.

EARL H. DELONG
Assistant Professor of Political Science, Northwestern University.

RICHARD T. ELY
President, Institute for Economic Research, New York City.

FRED D. FAGO, JR.
Dean, School of Commerce, Northwestern University.

JOHN M. GAUS
Professor of Political Science, University of Wisconsin.

HAROLD C. HAVIGHURST
Professor of Law, Northwestern University School of Law.

E. W. MOREHOUSE
Director, Division of Rates and Research, Public Service Commission of Wisconsin.

HORACE SECRIST
Professor of Economics and Statistics, Northwestern University.

HERBERT D. SIMPSON
Professor of Public Finance, Northwestern University.

HENRY C. TAYLOR
Director, Farm Foundation, Chicago.

GEORGE S. WEHRWEIN
Professor of Agricultural Economics, University of Wisconsin.

COLEMAN WOODBURY
Executive Director, National Association of Housing Officials; Member, Executive Committee, International Federation for Housing and Town Planning; Member, Chicago Housing Authority.

HELEN C. MONCHOW, *Managing Editor*

The contributors to this number include:

Frederick M. Babcock, Assistant Administrator and Director of the Underwriting Division, Federal Housing Administration.

Wentworth W. Peirce, Graduate School of Economics, The American University.

Floyd R. Simpson, Instructor in Economics, School of Business Administration, University of Minnesota.

Warren Roberts, Assistant Professor of Economics, Western Reserve University.

William F. Kennedy, Graduate Assistant in Economics and Commerce, University of Wisconsin.

Genevieve Koester, Instructor in College of Commerce and Finance, Drake University.

William H. Moore, Economist, Farm Credit Administration, Washington, D.C.

Robert B. Pettengill, University of Southern California.

Lawrence S. Dreiman, Teaching Assistant in Economics, School of Business Administration, University of Minnesota.

Paul Oppermann, Assistant Director, American Society of Planning Officials.

Harland Bartholomew, City Planner, St. Louis, Missouri.

Helen C. Monchow, of the *Journal* staff.

H. A. Hockley, Legislative Analyst, United States Department of Agriculture.

J. A. Baker, Fellow, Department of Agricultural Economics, University of Wisconsin.

Charles F. Marsh, Professor of Economics, College of William and Mary.

E. D. Ostrander, Supervisor, Rates and Research Section, Illinois Commerce Commission.

William A. Dittmer, Public Utility Consultant, Illinois Commerce Commission.

D. Philip Locklin, University of Illinois.

Ernest M. Fisher, Director, Division of Economics and Statistics, Federal Housing Administration.

Alfred Bettman, Moulinier, Bettman & Hunt, Cincinnati, Ohio.

Eugene Cary, Real Estate Department, New York Life Insurance Co., Chicago, Ill.

Emerson P. Schmidt, Associate Professor of Economics, University of Minnesota.

W. J. Crowley, Lecturer in Public Utilities, Northwestern University.

Scott Keyes, University of Wisconsin.

THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

FEBRUARY
1939



VOLUME XV
NUMBER 1

Influence of the Federal Housing Administration on Mortgage Lending Policy

By FREDERICK M. BABCOCK*

MORTGAGE lending policy is a broad field. It embraces the attitudes and decisions of many men toward problems of investment under a variety of changing conditions. The manner and extent to which lending policies have been influenced by the presence of the Federal Housing Administration are problematical because this governmental agency is itself a creature of influences and attitudes in this field of investment. In other words, it would be most difficult to try to determine which aspects of the agency are caused by and which are the effects of changed conditions.

It seems to me to be absurd to contend that the methods of mortgage financing described as the FHA system are original in any respect. Use of monthly payments to cover principal, interest, taxes, and hazard insurance is certainly not new. The amortization of mortgages in installments is not unique and long antedates the FHA. The granting of mortgages for long periods of time is likewise not new. These characteristics of the sys-

tem were inherited from a long line of ancestors in the mortgage world and their adoption by the Federal Housing Administration can represent nothing more than a recognition that, among the alternative methods of financing, these elements are superior.

The same is true, by and large, of the interest rate itself. While it may be claimed that the FHA is responsible for the widespread reduction in the rate of interest on mortgages, the fact remains that the 5% maximum set in the National Housing Act is simply the result of numerous market forces which have carried all rates downward.

Perhaps the very general abandonment of the second mortgage *was* caused by the Federal Housing Administration. Still, the tendency to make mortgages for relatively high percentages of appraised values was present in lending policy before the National Housing Act was enacted in 1934 and before the amendments of 1938.

Furthermore, the idea of guaranteeing mortgages is not new. Mortgage insurance

Conference at Indiana University, December 6, 1938, and is reproduced here with the permission of the sponsors of the Conference.

* Assistant Administrator, Federal Housing Administration.

This article was originally used, substantially in its present form, as a lecture at the First Indiana Mortgage

has been available from private sources for many years.

If, then, the Federal Housing Administration cannot lay claim to originality, what has been its influence? Frankly, its influence has been tremendous. It can properly claim to have been a major influence on lending policy and to have been responsible for profound changes in the attitudes of mortgage investors and home buyers.

In the first place, it has assembled and incorporated into its system the best practices of traditional lending procedure. It has adopted the essential elements of good practice and has, by and large, standardized them. There is now a uniformity in many factors throughout the entire country, and practices have ceased to be local quirks. Valuation practice has become uniform. Risk ratings are established to determine the acceptability of mortgages as investments. Lenders give more consideration to the standing of prospective borrowers and pursue more or less standardized methods in the examination of mortgagors. Wild aberrations in interest rates, mortgage terms, and methods of payment have been ironed out to such an extent that we have mortgages competing on a uniform basis in a national secondary market.

The adoption of better practices and policies on a general and widespread scale must be considered as a significant contribution of the FHA. Other agencies have done their part in bringing about this change, but none has been more influential than the FHA.

Probably the influence of the FHA on mortgage lending policy, as it relates to the selection of mortgages for investment, is its major contribution. The integration of traditional best practices and the addition of new concepts and techniques for the analysis of preferred

loans is of greater importance than has been generally recognized. New emphasis is given to factors and relationships which were frequently neglected in the wild competition of the former mortgage markets. New devices for controlling decisions and for bringing about consistency in decisions have come into use as a result of the FHA. These are so significant that I propose to enumerate some of them.

For illustration, emphasis is now placed on risk instead of value. Practice very generally assumed that valuation and comfortably low loan-value ratios were the very essence of good lending policy. Regardless of the character of the borrower or the nature of the junior financial structure, the loan was considered sound, *ipso facto*, if it bore a low ratio to someone's appraisal of the property. This idea has lost much ground today. It is increasingly unusual to find lenders who will throw their entire reliance on valuations. We know today how inaccurate the best appraisal may be and, what is much more important, we recognize that the relative safety of mortgage investments is measured by a number of factors which do not affect the valuation at all. The FHA risk-rating system is designed to measure risk of relative safety of investment directly. In it is included the vitally important ratio of loan to valuation, but the final measurement, which is a qualitative, not a quantitative expression, is not controlled alone by the percentage the loan bears to the appraisal. Valuation takes its place as one, but only one, of a number of operations in the risk-rating process.

These changes in the machinery used to select mortgages for investment are exceedingly interesting phenomena in our business. My imagination is captured by the growth of the idea that income potentialities are of greater im-

portance than capital values. It is more important to estimate the probable relation between the net rents of an apartment and the debt service on the proposed mortgage than it is to determine that ratio of the principal amount of the loan to the estimate of the capital value of the security.

We now know that the character of a future net income stream is as important as the estimated amount of the income. If we have a store property with an expected annual net income of \$8,000 and a theater property with an expected net income of \$8,000, we will not consider them to be equivalent risks. The store property's income is susceptible to much less fluctuation than is the theater property's income.

We have learned to give a great deal of weight to the significance of the expense ratio as a measure of investment risk. If the gross income of the store is \$12,000 and the expenses are \$4,000, the net income will be \$8,000 and the expense ratio will be 33%. If the gross income of the theater is \$22,000 and the expenses are \$14,000, the net income will be \$8,000 and the expense ratio will be 64%. Why is the expense ratio important? Presume gross incomes were to decline only 10%—that is, to \$10,800 for the store and to \$19,800 for the theater. Then the store's net income would be \$6,800, a decline of 15%, and the theater's net income would be \$5,800, a decline of 27½%. Expense ratios tend to indicate the susceptibility of net incomes to fluctuation.

Another example of the change in emphasis: The probability or even certainty of price and value fluctuations in the future is not only accepted but is now measured. The devices by means of which it is measured are rather crude, I will admit but, nevertheless, the attempt is made by lenders and by the FHA.

Such things are dealt with in terms of probability, not possibility. The results of such analyses are customarily expressed now in terms which compare one situation with another. We set up conclusions against relative scales, not absolute scales. We discuss the relative stability of different economic background areas and different residential districts.

This change in emphasis has led us to another. We are coming to feel more confidence in loans in districts which show relative stability. This sounds axiomatic today, but it was not many years ago that appraisers were asked to report on whether a district had a value trend which was downward, constant, or upward. Lenders preferred to place their funds in those districts reported to be on an upward trend. Today, the likelihood of any considerable fluctuation is viewed with disfavor. Today, most residential neighborhoods are considered to trend downward most of the time. Attention is therefore focussed on the degree to which the district is susceptible to decline and the probable rate of decline.

To me the most interesting change in emphasis in lending policy, as it relates to the selection of mortgages for investment, is abandonment of the ancient idea that loans fall into two classes only—the good and the bad. Risk rating has brought home forcibly the fact that loans cannot be classified simply as black and white. We now see all the numerous shades of gray in between.

Several other changes are readily observed. The relative importance of the borrower has increased. The decisions of lenders are now influenced considerably more by the characteristics of the mortgagor than formerly. We were once tempted to accept good real estate security as a substitute for a qualified borrower. This faulty emphasis contributed

to the bad custom of Americans to overbuy, to bite off chunks too big for them to digest. Now we consider the amount, source, and stability of a family's income; we analyze the motivation of the borrower and his attitude toward this and other obligations; and we find ourselves vitally concerned with the long-range probabilities of satisfactory future income as indicated by the borrower's education, training, age, health, and numerous other factors which affect his employability. The cash equity or cash investment requirements of the FHA are not imposed primarily to do away with second mortgages. They are related more to the fact that a borrower must have sufficient motivation to hold him to the deal when the strain occurs.

The most gratifying change in emphasis is that which has to do with the environment of the security. Real estate is location before it is anything else. Many mortgage lenders used to feel that their troubles would all be solved if they confined their loans to well-constructed buildings. The emphasis was on specifications, workmanship, and concrete mixers. Today we emphasize location as such. If forced to choose between good construction in a poor location and poor construction in a good location, we are inclined toward the latter. Fortunately, we have really added the emphasis on good location without in any way losing our interest in good construction. The gratifying change is that we now see in location the vital part it plays in contributing to investment safety or in introducing investment risk.

Valuation, as it relates to mortgage lending, has undergone some revision. We have long since departed from the dangerous assumption that values really change but little through the years. We hear less frequently the expressions "normal value" and "stabilized value." The

mortgage lender of the past solved his valuation problem to his own satisfaction by placing his confidence in selected men—men who were presumed to "know values," or men who were known to be honest and conservative. How the appraiser went about making his estimates, and which of the many diverse concepts of "value," if any, the appraiser subscribed to, were not investigated. Value was value. Jones is a reliable man. "Therefore," said many typical lenders, "we have no particular appraisal problem."

But Jones, personally honest and sincere, was not a reliable man. If he had had a background of engineering or building construction, he usually estimated the replacement cost of the property and reported it as the value. If he was a real estate broker, he called the market and reported the price he figured it would probably bring in a sale.

We have never really been honest with ourselves with respect to this business of appraisal. The wide diversity of answers that the Joneses gave us was appalling. Today we not only have sound concepts available as guides but we find these concepts generally adopted into use and followed.

For example, we have developed the substitution theory. This theory puts the replacement cost method and market price data in their proper relationship to valuation. An estimate of the costs involved in replacing a property is not an estimate of the value of the property. Neither is an estimate of the price which a property will command in a sales transaction an estimate of its value. To be a valuation process, under the now generally accepted definitions of value used for mortgage lending purposes, the procedure must embrace a forecast of probable future net incomes in dollars or in terms of valuable services and the

translation of the predictions, usually by capitalization, into estimates of corresponding present value.

What the substitution theory does advance is the idea that, regardless of probable future income-producing capacity, no property may be properly appraised at a figure in excess of the amount at which an equally desirable and substantially identical property may be obtained by buyers in the same market and at the same time.

Such buyers have two alternatives with respect to the securing of substitute properties. They may buy lots and build buildings on them or they may purchase existing properties now offered in the market. In no case are they warranted

in paying more for the subject property than the cost of constructing a new property or the price at which equivalent properties are available in the market.

Thus, the substitution theory provides control factors to prevent overvaluation. The general acceptance of the theory will prove, I believe, to be an important factor in future mortgage lending policy.

Mortgage lending policy has changed in important particulars. The FHA has contributed its share in bringing about the changes. What changes the future may hold, especially with the welcome entrance of educational institutions into our field of thought, can only be guessed.

The Response of New Construction in the Electric Utility Industry to the Demand for Power

By WENTWORTH W. PEIRCE*

IT IS characteristic of an industry, in a time of depression, to avoid all new commitments for the construction of capacity. This behavior, in itself, may be dictated by the simplest rules of business prudence. It entails, however, the most disastrous consequences upon those industries which are engaged in the production of machinery and supplies.

The reduction in demand for consumers' goods may be fractional. The effect upon the manufacturer of producers' goods, however, is sweeping, since the plants which he supplies not only abandon new construction, but frequently neglect the replacements necessary to maintain existing equipment.

The manufacturers of machinery and equipment furnish 18% of the nation's industrial output. Between 1929 and 1933, they accounted for 30% of the reduction in industrial employment.¹ These are the heavy industries. Their behavior is inextricably associated with the long decline which lies between the first slight drop in consumer purchasing power and its ultimate collapse.

It may be said that the mortal decline in the demand for industrial equipment can be reduced by an intelligent program of forward construction. But who is to apply it? It is useless to urge upon an industry a program of expansion when sales are already falling off. No man can tell how far down they may go.

It is an error to suppose that business, any more than the farmer, can peer into the future. Business is only an aggregate of simple men, working in

the dark. Their greatest preparations for future expansion were made in the last few months before the crash. No year for industrial construction has ever approached 1929. There was no lack of risk capital then. But there is, and will always be, a lack of private risk capital in a depression, because in such a time there are no rewards in sight adequate to persuade a man of property to endanger his own wherewithal, and that which is the support of his family.

This paper is concerned with the response of a single industry to boom or depression sentiment. This industry, electric power, represents a greater investment than any except the railroads. Its revenues amount to two billion dollars a year. It is peculiarly adapted to a program of construction which might proceed at a regular rate, independent of those fluctuations which, elsewhere, affect business markets and hopes. This is true because of the stability of its income and the steady growth of its markets, and because of the long period of construction which must elapse before any expansion which is planned may be completed and rendered serviceable to the public. The possibility of overbuilding is diminished by the great variety of uses for the product, and by the vast opportunities present for promoting an expansion of the market.

The Growth of Electric Energy Sales. From 1902 to the end of 1929 the sale of electric power increased in every year except one. In the last 15 years of this period, the growth took place, for the

declined from 1,686,192 in 1929 to 847,079 in 1933, as compared with a decline from 8,821,757 to 6,055,736 for all industries in the same period. (*Statistical Abstract of the United States*, 1937, p. 742.)

* Graduate School of Economics, The American University.

¹ The number of wage earners employed in the manufacture of machinery and transportation equipment

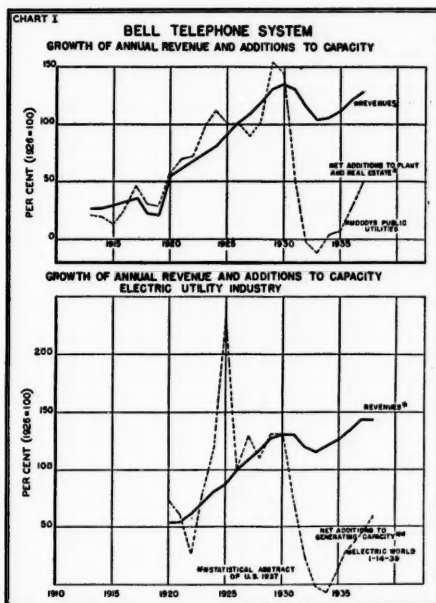
most part, at the rate of some 10 billion kilowatt-hours every two years, expanding from 16 billion kilowatt-hours in 1914 to 93 billions in 1929.²

The increase in the use of electric energy has been accompanied by a corresponding increase in revenues. Consequently, conditions have been unusually favorable for expansion of capacity at a constant rate to meet the future demands of consumers.

The present depression witnessed the first serious decline in electric revenues since the birth of the industry. This decline, however, amounted to only 12% from the peak year in 1930 to the low in 1933. It was more than recovered in 1936, and subsequent sales, in 1937, rose to 2.2 billions of dollars, or over 10% above the pre-depression high.³

Additions to Electric Generating Capacity. In striking contrast with the regularity which has characterized the growth of electric energy sales, electric utility construction has undergone the most violent changes. In 1922, when there was a total installed capacity of 16 million kilowatts, net additions to capacity amounted to half a million kilowatts. The additions doubled in each subsequent year, until in 1925 they amounted to four million kilowatts. In 1926 they declined to approximately 2 million kilowatts, at which level they remained, subject to minor fluctuations, until the precipitate drop in 1931, which carried them to less than nothing by 1933.⁴

Variations of electric utility revenue and additions to capacity are shown in comparison with those of the telephone industry on Chart I. The accompanying fluctuations in the production of electric



cal supplies and in the production of telephone supplies appear on Chart II.

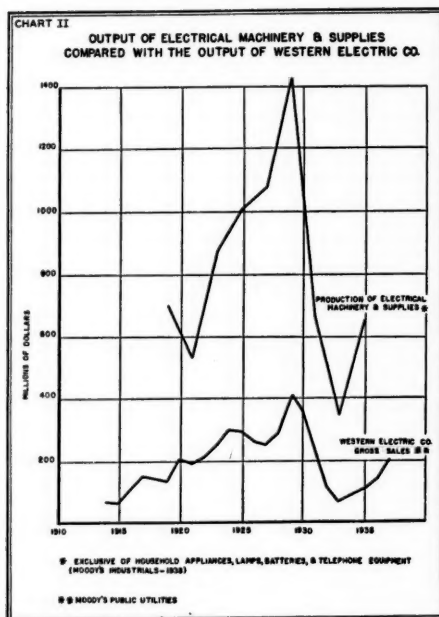
As a result of anti-trust action, the affiliations between electric utilities and the manufacturers by whom they are supplied (once present through affiliation between Electric Bond and Share, a holding company, and General Electric) have been severed. As a consequence, the electric utilities have little concern in maintaining for the supply firms a continuous rate of business. The Telephone Company, upon the other hand, owns the entire capital stock of the Western Electric Company (by whom it is supplied) and is accordingly interested in a policy which will enable that company to maintain a more or less continuous rate of operation. The effect of this difference is apparent upon reference to the charts.⁵

² *Electrical World*, January 15, 1938, p. 71.

³ *Idem.*, p. 85. Revenues for 1938 remained almost stationary, receding a fraction of 1% below those for 1937.

⁴ *Statistical Abstract of the United States*, 1937, p. 349.

⁵ The rate of new construction, as shown on Chart I, (Footnote 5 continued on page 8)



In the electric utility industry, a year-to-year variation of 100% in the construction of new capacity is by no means exceptional. In the telephone industry, on the other hand, net additions between 1920 and 1930 were never in any year more than 50% above nor 10% below those in the preceding year. It is interesting to note that this relative stability in the rate of expansion for the telephone industry occurs in spite of revenues somewhat less stable than those of the electric utility industry. Unlike the customer of an electric utility, the telephone subscriber is not under the necessity of purchasing expensive appliances and he can accordingly dispense with the service without suffering any serious loss of investment.

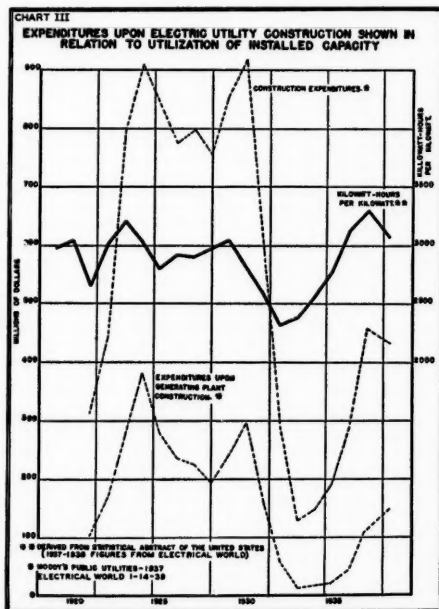
The factors which govern new construction in the electric utility industry

(Footnote 5 continued from page 7)

may be affected not only by differences in the corporate but in the capital structure of the two industries. For example, the Telephone Company, with an equity of

are apparent on Chart III. A peak in expenditures for electric utility construction normally occurs in the year following a peak in the utilization of existing capacity. It is evident that a policy of "forward construction" is not the controlling feature and the building program of the industry is strictly characterized by a hand-to-mouth policy.

Chart III shows also that during the period from 1920 to 1930 utilization of capacity in excess of 2,800 kwhs. per kilowatt (or 31% of the theoretical maximum) was normally followed by a sharp increase in new construction. Since 1935,



however, utilization substantially in excess of 3,000 kwhs. per kilowatt has been followed by expenditures upon new construction which are still well below the average for the 10 years preceding 1930.

80%, can afford to engage in forward construction more boldly than is generally the case in the electric utility industry where the average proportion of equity capital is less than 60%.

To some degree, the extension of interconnections between systems and a more even distribution of the load have permitted a greater utilization of capacity than before. In great part, however, the present lag in electric utility construction reflects the economic and political misgivings which have persuaded executives to postpone necessary additions until the last moment of urgency. The industry has permitted itself to hover somewhat closer than before to the extremity in which it may be embarrassed by a rapid expansion of demand. The response of new construction to the recent growth in energy sales has been late; but it may not be presumed that it will be less violent in its coming.

The alternation of electric utility construction between a virtual suspension of activity and sudden boom necessarily affects the ability of manufacturers of supplies to provide constant employment for either capital or labor. This loss is reflected, not only in the increased cost of efficient service, but in the contributions made by this industry to the violence of the business cycle in each upward or downward swing.

Incentives to Construction in Slack rather than Boom Periods. Construction in a boom is undertaken in the face of necessity. The maintenance of construction during a slack period depends upon the factors which may render it profitable to anticipate a future demand. In the case of an industrial corporation, the advantages obtained through construction at such a time consist, theoretically, of cheap materials, cheap labor, and the low rates at which capital may be obtained. It is questionable whether any of these advantages is actually operative as an incentive to construction on the part of an electric utility.

The cost of electric utility construction, including labor and materials, declined approximately 16% from the peak in 1929 to the low in 1933.⁶ If the 1933 figure is considered a bargain price, beyond which no subsequent reduction could take place, it still might be questioned whether any real benefit would accrue to a utility which sought, at such a time, to construct in anticipation of its future needs. If this construction proved in excess of the needs of its customers for any considerable period, there would be little likelihood that the utility could obtain authorization for an increase in rates to cover carrying charges on the unused equipment. The loss would come out of earnings.

If, on the other hand, the construction proved well-timed, it is questionable whether the utility would be enabled to profit thereby since, under the prudent-investment principle (which is frequently accorded the greatest weight by a regulatory body), the per cent return allowed upon an investment made in a period of low prices might well be the same as that allowed upon an investment made in a period of high prices. The savings from off-peak construction would not accrue to the benefit of the utility. They would all be distributed to the consumer.

It might be supposed that, if the low cost of labor and materials provides no inducement, some, at least, is provided in a depression period by the low rates at which money may be obtained. If a fixed rate of return is allowed upon capital invested, obviously the highest dividends to stockholders will be paid by properties constructed when bonded indebtedness was incurred at low interest rates.

Examination of interest rates, how-

⁶ *Public Utility Construction Cost Indexes and Financial and Operating Ratios*, compiled and published

by Whitman, Requardt and Smith, Consulting Engineers, Baltimore, Md.

ever, gives little support to the conclusion that utilities are able, during a depression, to borrow at lower rates than before. The yield on public utility bonds was higher in the depression years of 1920 and 1921 than at the close of the war boom in 1919. Similarly, it was higher during the first five years of the current depression than in 1928 and the subsequent decline in 1935, 1936, and 1937 may have been attributable as much to the expansion of federal credit as to any natural cause to be associated with a depression.⁷

Governmental Measures to Induce Electric Utility Construction. At the present time, when utilization of installed capacity is relatively high, the maintenance of a normal rate of utility construction is a less serious problem than in the trough of the depression. The lag which still occurs may be corrected by the increasing pressure of a growing energy load. In furtherance of a program of national defense, the administration is making elaborate studies of the adequacy of existing equipment, and it is to be expected that by peaceful conversations, threats, or government loans, utilities serving the more important centers will be induced to make such additions to their equipment as the ordinary growth of their loads might otherwise have required.

A program which is entered under the urgency of a present need, however, is not of the description to alter those violent and spasmodic fluctuations of construction which, in the past, have been the contribution of the electric utility industry to industrial instability. The question is not how to induce new con-

struction in a time of need, but how to induce it in the midst of general despair, when nothing will sell, and all commodities are at a surfeit.

There is the proposal for a concerted advance in industry, induced by a general undertaking, on the part of the government, to purchase and dispose of the surpluses which might result from full operation. Such a proposal, if it is practical at all, is rather adapted to the output of consumers' goods than to the production of highly specialized industrial equipment which has frequently to be designed for a single installation.

There are two fields, however, in which the government might properly cooperate with electric utilities for promotion of construction in a depression period. The first is in the replacement of old and inefficient equipment. The National Power Survey, conducted in 1935, revealed that 28% of the steam electric generating capacity had been installed prior to 1921, and 58% had been installed prior to 1926.⁸ In the years following 1920, improvements in design reduced by half the coal required to generate a kilowatt-hour.⁹ It is possible that, even in a time of slack operations, instances would be found in which generating capacity in active service might economically be replaced by new equipment, under favorable credit conditions. The government could promote such replacements, by lending to the utilities in a depression at low interest rates, and by actively investigating operating conditions, where there was a possibility that replacements might actually be financed out of the economies obtained from utilization of new and efficient

⁷ See Moody's Bond Yields for 40 Public Utilities, as quoted in *Survey of Current Business*, November, 1937, p. 20 and December, 1937, p. 36.

⁸ Federal Power Commission National Power Survey, *Interim Report*, 1935.

⁹ The average consumption of coal in steam generating stations was 3 pounds per kilowatt-hour in 1920. It had declined to 1.44 pounds in 1936. (From statistics of the U.S. Geological Survey and, since July, 1936, the Federal Power Commission, quoted in the *Electrical World*, January 15, 1938.)

equipment. The presence of opportunities in this quarter appears the more likely when it is recalled that a utility, if its earnings are already satisfactory, has not the same incentive as a competitive industry to improve its efficiency.

The second field for the promotion of electric utility construction in a depression period occurs through anticipation of a future demand. It has been pointed out that an electric utility is without any real incentive to pursue a program of forward construction. Such an incentive, however, may be supplied through insurance against failure to obtain immediate utilization of the equipment installed. Since the advantage which would result from construction in a depression period is a social advantage (as distinguished from an advantage to any individual corporation), so it may be induced only by socializing the risks which are involved.

It is not supposed that the responsibility of such an undertaking could be incurred by the government without expense. Something can be said, however, for governmental expenditures that may be expected to pay a return upon the capital which is supplied. By the intelligent selection of projects, the possibility of eventual loss might be minimized. With the resources of the government for investigation and the vast area over which its energies may be applied, the risk would be less than if any single corporation or group were to "come out of hiding" and undertake a program of expansion, as business, in depression, is so often exhorted to do.

The possibility of loss is the less because of the almost continuous growth which has characterized the demand for electric energy, and because of the vast

opportunities which still remain for forcibly expanding its use.

The sale of appliances by a federal agency in the Tennessee Valley has already demonstrated the extent to which residential consumption may be "forced." In the case of a single community, the average consumption of energy has been increased in three years by as much as 180%.¹⁰ The development of residential electric sales is by no means at the saturation point in the United States. Electric water-heaters are not marketed on a large scale in this country, although there are communities in which they are more economical to operate (as well as more convenient and sanitary) than those fired by gas. In the City of Winnipeg, Manitoba, largely through the sale of this appliance, an average residential consumption of 4,680 kwhs. a year has been obtained.¹¹ The average in the United States is less than 900 kwhs.

The opportunities for expanding the sale of industrial power are peculiarly subject to local conditions. In individual cases, however, it should be possible to increase sales through modernization of equipment and substitution of electricity for other forms of power.

By employing federal credit to promote the installation of equipment for the increased production and consumption of electric energy, a depression may be utilized as a period for the modernization of facilities. In this manner it may be possible to introduce an element of stability into the rate of industrial construction, correcting one major factor in the duration of a depression, while at the same time improving the processes by which the public is served.

¹⁰ Tennessee Valley Authority, *Annual Report*, 1937.

¹¹ City of Winnipeg Hydro Electric System, 25th *Annual Report*, December 31, 1936.

Public Utility Refunds: A Study of Regulatory Ineffectiveness

By FLOYD R. SIMPSON*

MUCH has been written about the ineffectiveness of utility regulation but little attention has been given to refunds paid to consumers as an indicator of that ineffectiveness. The procedure by which refunds arise, their frequency, size, and cost all throw some light on the regulatory problem.

Refunds may come about when a commission order lowering rates or preventing higher rates from becoming effective is appealed to the courts for review. The court grants a temporary injunction against enforcement of the commission's order and requires the company to post a bond or impound the excess funds collected, or both, so as to protect consumers paying the higher rates until a final decision is made.¹

Thirty-five states were found to have made provision in their statutes for appeal from the orders of their commissions. Seventeen of these states also make some statutory provision for the posting of bond when appeal is made. The amount of such bond is not usually designated but must be

"sufficient in amount and security to insure the prompt payment . . . of all damages caused by the delay in enforcement of the rule, regulation, order or decision . . . in case said rule, regulation, or order is sustained."²

* Instructor in Economics, School of Business Administration, University of Minnesota.

¹ The terms "refund" and "reparation" are frequently used interchangeably, but a distinction must be noted. "Reparations" may be awarded when it is found, upon complaint, that an excessive charge has been arbitrarily or erroneously levied by a company against consumers. This charge may be an unfilled rate, a rate in excess of the legally filed rates, or in excess of what is determined to be "reasonable." The power of commissions to require reparations varies from state to state, and in some states resort must be made to the courts.

Another method by which refunds may arise employs the same mechanism (i.e., posting of bond), but is provided for by statute in connection with commission hearings rather than court appeal. In this situation higher rates desired by the company are allowed to become effective before the commission has approved them, following the statutory period of waiting, upon the filing of bond with the commission. This action not only protects the rate payers, but gives the company the advantage of the higher rates immediately. If subsequent hearings indicate the higher rate is not justified, a refund of the excess revenue collected will be ordered. Only four states were found to have made this provision up to 1937.³ Ohio has had it for a number of years and this is no doubt the reason that refunds have been more numerous in that State than elsewhere.⁴

A third basis for refunds arises in connection with customer contributions toward the cost of lines or equipment. When additional customers come on such a line, or the utility changes to a policy of financing the line and equipment itself, refunds are made to those who made the contributions. This type of refund does not present the same problems

² Illinois Public Utility Act, Art. V, §71.

³ Kentucky, Ohio, Pennsylvania, and South Carolina.

⁴ The Bureau of Research and Statistics of the Ohio Commission has provided the following figures which indicate the extent of refund orders in that State from 1932 to 1936 inclusive:

Refunds ordered in the electric industry	\$ 86,504
Refunds ordered in the gas industry . . .	4,709,502
Refunds ordered in the telephone industry	11,896,436
Refunds ordered in the water industry	3,100
Total	\$16,695,543

as the others and will not be dealt with in this article.

Consumer Protections against Excessive Rates

The most widely used protection for consumers during periods of litigation over alleged excessive rates is the posting of bond by the company allowed to collect such rates. The amount of the bond varies with the individual case. In the recent Los Angeles Gas and Electric case the district court required but a \$200,000 personal bond, a local banker and the chairman of the board of the Company acting as sureties, although the final refund amounted to over \$3,000,000.⁵ In other cases, such as the Ohio Bell Telephone case, the amount of the bond is kept as large as the questionable revenues being accumulated.

As a further protection to consumers the court may also require that accounts of the amount collected in excess from each customer be kept and filed with it periodically.⁶

The actual impounding of the revenues subject to question has also been employed to protect rate payers. Some state laws still require that this be done even though bond is also posted.⁷ Such action appears to be a needless and expensive precaution and duplication. The early Consolidated Gas case, which was one of the largest refund cases in this country, employed the impounding method. Excess funds amounting to over \$10,000,000 were accumulated during litigation and turned over to a master appointed by the federal district court. The impounding procedure has the disadvantages of making the court responsible for huge funds, of depriving the

company of use of the funds during litigation, and of not earning any interest for the consumers during the period of controversy.

Other protections which have been employed in the interest of consumers paying questionable rates are the separate indication on each bill and receipt of the contested portion being paid, or the giving of rebate slips indicating such amounts. The latter method was used by the Clarks Ferry Bridge Company, in Pennsylvania, for toll charges which might become redeemable. Several cases were found where the company was required to set up separate reserve accounts on their records, showing all contested revenues.

The Refunding Process

Excess collections have been put back in the hands of consumers by several methods. In the Consolidated Gas Company case in 1910 the master for the court assembled a staff of clerks and prepared the drafts for each consumer. More recently the method has been to allow the company to do the clerical work under general instructions issued by the court or commission. The large Los Angeles Gas and Electric and Illinois Bell refunds were administered by the companies. The State of Washington requires by law that all moneys to be refunded are to be paid into the Department of Public Works for transmittal to consumers. A deduction of 10% of the gross amount refundable is made by the Department for "the Public Service Revolving Fund."⁸ Oklahoma also requires refundable money to be given to the Commission for transmittal to con-

⁵ Correspondence with the Company.

⁶ For a discussion of the problem see *Bonbright v. Geary*, 210 Fed. 44 (1913).

⁷ Seven states were found to have this requirement, while three leave it to the option of the state court. In

the federal judiciary it is optional with the court. For a discussion of the problem see *Spring Valley Water Co. v. City of San Francisco*, 165 Fed. 667 (1908).

⁸ Laws of Washington, 1921, c. 110.

sumers, and deducts 10% for diversion to the general fund of the State.^{8a}

Time limits are usually ordered for completing a refund, varying with the individual case. A survey of many refund cases revealed a range of from 30 days to five years. The Illinois Bell Telephone Company was given three years to complete its large refund of nearly \$19,000,000. The Ohio Bell will be given one year to distribute approximately \$7,500,000.

In all cases where funds accumulate for a period longer than one month it is customary to require the company to pay interest on the refundable amounts. Six per cent is commonly paid, although the Illinois Bell was required to pay but 5%.

The Disposal of Unpaid Refund Balances

In nearly every refund a portion of the funds remain unclaimed because of inability to locate the claimant. In the Clarks Ferry Bridge Company refund of \$73,000 over 70% remained unpaid in 1936, after several years of refunding.⁹ In this case all responsibility rested with holders of rebate slips to present them. The Illinois Bell paid out about 90% of its refund of \$18,897,000 during the three years claims were allowed. The Los Angeles Gas and Electric Corporation paid out 94% of \$3,300,000, and the Chesapeake and Potomac Telephone Company was able to dispose of 99% of its first refund of \$210,000.

^{8a} The constitutionality of this requirement will be tested in the United States Supreme Court in 1939, following appeal by several refund recipients. (*Telephony*, December 24, 1938, p. 20.)

⁹ Correspondence with the Pennsylvania Public Service Commission.

¹⁰ The right of the company to such funds is questionable. Rates ordered by the state were questioned and contested by the company. Subsequent hearings proved the company management to have been in error in believing the rates insufficient and therefore they have no claim to any of the excessive revenues received.

The disposal of unclaimed funds often arouses some controversy among those who feel they have some claim upon them. In the Illinois Bell case a four-cornered fight was waged between the City of Chicago, Cook County, the State of Illinois, and the Company for the \$1,500,000 remaining. The Company was finally awarded the bulk of the fund by the federal district court.¹⁰ In the Los Angeles Gas and Electric case the \$207,000 which remained at the end of 1935 was being held in a current liability fund by the Company. The Chesapeake and Potomac Telephone Company was allowed to transfer the remaining fund of less than \$1,800 from its second refund of \$1,000,000 to surplus in 1938. The Central Kentucky Natural Gas Company and the City of Lexington agreed to divide an unclaimed refund of \$409,000. The Potomac Electric Power Company was allowed to prorate the unpaid refund of \$294,000 as income over a period of 20 years from 1928 to 1948.¹¹ The Ohio Bell will turn over any money remaining unclaimed from its \$7,500,000 refund, after December 15, 1939, to the municipality in which the subscriber lived during the period when the refund accumulated.^{11a}

A few states have made provision by statute for disposal of unclaimed funds.¹² The laws usually require that at the end of the refund period publication be made once a week for two consecutive weeks

Unpaid refunds should be given to the state, or at least credited to present consumers in some manner. Furthermore, it seems unfair that even litigation costs of contesting the commissions' orders should be added to operating expenses in those cases where the management of the utility was in error. Such expenses should, in all fairness, be charged against the companies' net income.

¹¹ The above figures were obtained by correspondence with the companies.

^{11a} *Telephony*, November 12, 1938, p. 30.

¹² California (to 1933), Idaho, Kansas, Missouri, Ohio, and Utah were found to have such provisions.

of the names of those entitled to refunds and the amounts thereof. If those amounts are unclaimed after three months from such publication, the funds are to be paid into the state treasury for the benefit of the general fund. An earlier Ohio law required the funds to be paid into the treasury of the local political subdivision in which the consumer who was entitled to the money lived.

Expense of Conducting Refunds

The cost of putting excess collections back into the hands of consumers varies from case to case, but tends to become larger per dollar returned the longer the period of litigation.¹³ The Consolidated Gas refund of \$10,400,000 in 1909 required the employment of 750 men for one year to prepare 1,360,000 vouchers.¹⁴ Cost figures are not available but expenses can be conservatively estimated between \$700,000 and \$1,000,000. The Illinois Bell Telephone refund (not including litigation costs) cost over \$2,739,000 to administer.¹⁵ With approximately \$17,300,000 refunded the cost of putting each dollar back in the hands of a consumer was approximately

15 cents. Actually, of course, the cost per dollar returned was much less for present subscribers who were easily located, and much higher for former subscribers who had moved frequently since taking the service. The general auditor has stated that about \$1,000,000 was spent on locating or endeavoring to locate the latter group.¹⁶

The Los Angeles Gas and Electric refund of \$3,300,000 in 1933 cost about \$152,000, or five cents per dollar.¹⁷ This case ran a shorter period of time (1930 to 1933) than the Illinois Bell case and required less clerical work to compute the refunds. The Southern California Gas Company refunded \$386,000 in 1933 at a cost of \$24,500, or approximately six cents per dollar.¹⁸ The East Ohio Gas Company made a refund in 1934 in Cleveland of \$3,800,000 at a cost of \$190,000, or five cents on the dollar.¹⁹ The Chesapeake and Potomac Telephone Company made a second refund in 1935, returning about \$1,000,000 at a

connected with the case, or the costs of the state and federal judiciary.

Cost of administering the refund	\$2,739,000
Estimated Company cost of the rate controversy (1921 to 1934)*	1,261,000
Attorney fees paid by consumers (7½% of all money refunded)†	1,550,000
Allowed the Illinois Commerce Commission for expenses (by the district court)	60,000
Allowed the City of Chicago for consulting engineers (by the district court) . . .	37,000
Total Estimated Cost	\$5,647,000

* Figure given by C. Emery Troxel in "Chronology of Two 'Old-Age' Rate Controversies," 14 *Journal of Land & Public Utility Economics* 105 (February, 1938).

† *Telephony*, January 8, 1938, p. 31.

When it is realized that much of the estimated \$1,550,000 attorney fees is deductible from the \$17,300,000 actually claimed by subscribers (since 7½% of each subscriber's portion was allotted to the attorneys for the City of Chicago), the cost of each dollar obtained in refund was over 35 cents, not to mention the 10½ years' delay in obtaining reduced rates.

¹⁷ From correspondence with the Railroad Commission of California.

¹⁸ *Ibid.*

¹⁹ From correspondence with the Company.

¹³ Complete cost figures have been difficult to obtain because of the unavailability of records or because of incomplete segregation of costs by the companies refunding.

¹⁴ 88 *Commercial and Financial Chronicle* 378, 689 (1909).

¹⁵ This figure was obtained from the Company and was divided as follows:

Salaries and supervision	\$2,419,780
Rent and house services	116,933
Postage and printing	92,629
Advertisements	27,853
Other expenses	82,192
Total	\$2,739,387

¹⁶ The following figures attempt to ascertain as nearly as possible the total cost to consumers and taxpayers of getting lower rates and a refund in the Illinois Bell Telephone case. The figures given do not include all the cost of time spent by regular employees of the Company or Commission while working on data con-

cost of \$34,000, or approximately 3 1/2 cents per dollar.²⁰

The few refunds cited above total over \$36,000,000 and the estimated costs come to over \$3,600,000, making an average refunding cost of 10 cents for every dollar returned to a consumer. When one realizes that this is a charge to operating expenses ultimately payable by the consumer along with the litigation expenses of both the company and the state, it is logical to conclude that refunds are a very poor substitute for more rapid and effective regulation.

²⁰ *Ibid.*

Outline of Some Leading Refund Cases

Table I summarizes some of the leading refund cases in American regulatory history. It is not possible to consider them all in detail; only a few larger cases will be discussed for illustrative purposes.

One of the oldest refund cases was that of the Consolidated Gas Company of New York. The Gas and Electric Commission acting under the state law ordered the rates of the Consolidated Gas reduced from \$1.00 to 80 cents per MCF as of May 1, 1906. The Company sought relief in the federal district court on the

TABLE I. A SUMMARY OF SOME LEADING REFUND CASES*

Company	Year Case Began	Year Case Ended†	Approximate Amount Pending October 1, 1938	Approximate Amount Ordered Refunded‡
Central Kentucky Natural Gas Co.	1927	1936		\$ 400,000
Chesapeake & Potomac Tel. Co.	1926	1927		210,000
Chesapeake & Potomac Tel. Co.¶	1932	1935		1,060,000
Chicago Telephone Co.	1902	1906		400,000§
Citizens Tel. Co. of Circleville, Ohio	1927	1931		21,000
Clarks Ferry Bridge Co.	1926	1927		72,000
	1932	1934		
Columbia Gas & Electric Co.	1924	—	\$1,939,000	
Consolidated Gas Co. of New York	1906	1909		10,417,000
Consolidated Edison of New York	1934	1938		970,000
Consolidated Water Co. of Utica	1933	—	600,000§	
East Ohio Gas Co.	1931	1934		3,800,000
Johnston Telephone Co. (Pa.)	1927	1931		36,000
Illinois Bell Telephone Co.	1923	1934		18,900,000
LaCade Gas Light Co. (Mo.)	1934	1938		926,000
Los Angeles Gas & Electric Co.	1930	1933		3,304,000
Marion County Telephone Co. (Ohio)	1925	1931		108,000
Mountain States Tel. & Tel. Co.	1918	1920		175,000§
Municipal Gas Co. (Texas)	1931	1935		130,000
Northern States Power Co. (N.D.)	1935	1936		220,000
Ohio Bell Telephone Co.	1924	1938		7,500,000
Ohio Central Telephone Corp.	1928	1931		62,000
Potomac Electric Co. (D.C.)	1917	1924		2,297,000
Scranton-Spring Brook Water Service Co.	1931	1937		4,550,000
Southern California Gas Co.	1932	1933		386,000
Southwestern Bell Telephone Co.	1935	1938		310,000
Van Wert Home Telephone Co. (Ohio)	1929	1931		16,000
Warren Telephone Co. (Ohio)	1928	1934		138,000
Upstate Telephone Corp. of N.Y.	?	1937		48,000
			\$2,539,000	\$56,456,000

* Sources: *Public Utilities Compendium*; *Commercial & Financial Chronicle*; *Public Utilities Fortnightly*; *Public Utilities Reports*; *Telephony*; *Moodys* (Public Utilities); correspondence with the companies and commissions.

† Dates cover the approximate period of the controversy, not necessarily the period for which the refund was made.

‡ A few of the refunds listed were made by compromise or agreement rather than by direct order of the commission or court.

§ Amount estimated from the best record available.

¶ In December, 1938 the Chesapeake and Potomac began a third refund, which is to go to certain subscribers in West Virginia, after the Commission refused to sanction certain rates charged from 1925 to 1931. The amount of this refund was not ascertained at the time of this writing. (*Telephony*, December 31, 1938, p. 34.)

grounds of confiscation of property. An injunction was granted against enforcement of the order, and all funds collected in excess of 80 cents were ordered impounded with the court. The federal court upheld the Company in a decision rendered on December 20, 1907. Appeal was made to the United States Supreme Court and that body upheld the Commission on January 4, 1909 (212 U. S. 19). From 1906 to 1909 over \$10,000,000 had been impounded and was ordered refunded.

The Ohio Bell Telephone case is reviewed here because it is an interesting example of administrative ineffectiveness. The Ohio Bell Telephone Company was formed about 1921 by consolidation of a number of smaller companies. Thereafter the new Company wished to institute a unified system of rates among the consolidated properties. This involved increases in local rates in some areas and in the state-wide toll schedule. In 1923 new rate schedules were filed separately for each exchange area with the Ohio Commission. Protests were immediately filed in many areas and, according to the Pence law then in force, the increase was allowed to go into effect after 120 days if bond was given by the Company. By October, 1924, 43 separate proceedings plus a toll proceeding were in progress.

At this point the Commission ordered all proceedings consolidated into a state-wide investigation. On June 30, 1925 the Commission began a valuation of the properties; in 1931 it issued a tentative valuation of \$104,282,735 as of June, 1925. The Company protested, new hearings were held, and in January, 1934 the valuation was set at \$96,422,276, and lower rates were ordered as of June, 1925. The Commission also set valuations for each year from 1926 to 1933

inclusive by applying price trends to the basic valuation, and ordered refunds to be made totaling \$13,289,000. The Company claimed violation of the Fourteenth Amendment to the Constitution on the ground that it did not have an opportunity to rebut the trend percentages used.

The protest was overruled and the Company was ordered to refund \$12,167,678. Further protest was without avail, but the refund covered by the bonds was revised to \$11,832,264. In November, 1934, the Company appealed to the Supreme Court of Ohio; that body upheld the Commission in a decision in July, 1936.²¹ The case then was taken to the United States Supreme Court which in April, 1937, remanded the case back to the Commission for further proceedings. The valuation after 1925 was held to have been made upon the "strength of evidential facts not spread on the record," and therefore did not provide "due process."²² The case was at a standstill, apparently because of the Ohio Commission's lack of funds, from that time until April, 1938, when a compromise agreement was reached between the Company and the Commission. The compromise provided that complete settlement would be made by the Company refunding \$7,225,000.²³ Immediately several cities and organizations filed protests with the Commission. These the Commission refused to hear and appeal was made to the Ohio Supreme Court where the Commission was upheld in October, 1938. It is a strange commentary upon rate regulation that it took 15 years of litigation for consumers in Ohio to know if and how greatly they had been overcharged for telephone services. In December, 1938 the Company be-

²¹ *Ohio Bell Tel. Co. v. Pub. Util. Com. of Ohio*, 57 Sup. Ct. 724 (1937).

²² *Telephony*, May 7, 1938, p. 32.

²³ *Ohio Bell Tel. Co. v. Pub. Util. Com. of Ohio*, 15 P.U.R. (N.S.) 443.

gan the refund of approximately \$7,500,000 to about 600,000 subscribers.

The largest refund made in the United States arose out of an 11-year controversy between the Illinois Bell Telephone Company and the Illinois Commerce Commission.²⁴ In 1921 hearings were begun in an endeavor to determine whether rates could be reduced in the Chicago area. In July, 1923, the hearings were concluded and rates on coin-box service²⁵ in the City of Chicago were ordered reduced as of October 1, 1923. The Company appealed to the federal district court and was granted an interlocutory injunction and required to file a bond to cover the amount collected in excess of the Commission-ordered rate. From 1923 to 1934 the case was before the federal district court or the United States Supreme Court, receiving attention from the latter body five times²⁶ and finally being decided in favor of the subscribers on April 30, 1934.

During the period from 1923 to 1934 at least \$12,000,000 was collected under bond and the Supreme Court ordered the lower court to provide for refunding the excess amounts collected from each subscriber plus interest. The Company was ordered to deduct 7 1/2% of each refund for the attorneys who carried on for the City of Chicago after city funds were no longer available. The liability for paying claims ceased on June 1, 1937, three years from the time the refund office was opened.

The Company set up a special staff of nearly 2,000 clerks to compute the re-

fund and interest due on each of over 45,000,000 receipts which had accumulated during the litigation and to prepare drafts. Payments were made to 1,495,974 subscribers.²⁷

The Problem and Suggested Remedies

The assumed power of the United States Supreme Court to review commission orders under the Fourteenth Amendment and the inadequate statutory and budgetary provisions which are made for most commission activities are basically responsible for ineffective regulation and therefore for large refunds.²⁸ The commissions have been tending to admit more evidence at their hearings in order to conform to the "due process" requirements which the courts insist upon. This has tended to make the commissions take on more of the aspects of a court at the sacrifice of regulatory functions. Hence we have long protracted commission hearings where 35,000 or more pages of evidence may be taken. In *Newton v. Consolidated Gas Company*²⁹ the judge remarked that there were "hundreds of useless exhibits and many thousand pages of matter without present value." A District of Columbia justice admitted in the Chesapeake and Potomac Telephone case that delay was caused by the inability of the court to wade through the voluminous testimony presented.³⁰

Many students of utility regulation have made suggestions for improving the present situation and reducing lengthy

(December, 1930); 283 U.S. 794 (April, 1931); 283 U.S. 808 (May, 1931); and 292 U.S. 151 (April, 1934).

²⁷ *Telephony*, January 8, 1938, p. 31.

²⁸ Mosher and Crawford, *Public Utility Regulation* (New York: Harper & Brothers, 1933), p. 70, point out that 40 commissions in the United States are each appropriated less than \$200,000 per year for all their work. A utility company may spend several million dollars on one case alone.

²⁹ 258 U.S. 165 (1922).

³⁰ *Telephony*, October 15, 1932, p. 34.

²⁴ The outline of this case is reduced to a minimum in order not to duplicate the able discussion by C. Emery Troxel, *op. cit.*

²⁵ Unlike other cities in the United States, over 25% of all residential and business telephones in Chicago were of the coin-box classification. Five cents is deposited each time an outgoing call is made and the contents of the boxes are collected by the Company at least once each month.

²⁶ See 269 U.S. 531 (October, 1925); 282 U.S. 133

litigations. Mosher and Crawford suggest that the "jurisdiction of the federal courts with respect to the prerogatives of the commission should be clarified."³¹ The ignoring of commission findings and the hearing of a case de novo, upon appeal, has done much to prolong rate cases, increase expenses, render commission regulation ineffective, and build up large refund balances. In 1934 the so-called Johnson Act was passed by Congress to limit cases which could be appealed to the federal district courts. In brief the act provided that

"no district court shall have jurisdiction of any suit to enjoin, suspend, or restrain the enforcement . . . of any order of an administrative board . . . where jurisdiction is based solely upon the grounds of diversity of citizenship, or the repugnance of such order to the constitution of the United States where such order affects rates chargeable by a public utility, does not interfere with interstate commerce, and has been made after reasonable notice and hearing, and where a plain, speedy and efficient remedy may be had at law or in equity in the courts of such state."³²

The act was primarily intended to force plaintiffs to exhaust their rights in the state courts before resorting to the federal judiciary. At this writing it is beginning to appear that the act will not accomplish as much as was desired. When an adverse decision is given a utility by a state court, the utility still may appeal to the United States Supreme Court if a deprivation of property is involved. Secondly, the interpretation of "plain, speedy and efficient remedy" is a matter for federal court review.³³

³¹ *Op. cit.*, p. 53.

³² 48 U.S. Stats. at Law 775.

³³ See *Corp. Com. of Okla. v. Cary*, 296 U.S. 452 (1935); *Mountain States Power Co. v. Pub. Serv. Com. of Montana*, 57 Sup. Ct. 168 (1936).

³⁴ Illinois, New York, North Dakota, Pennsylvania, and Virginia.

³⁵ *Bronx Gas & Elec. Co. v. Malbie*, 14 P.U.R. (N.S.) 337 (1936). See Robert W. Harbeson, "A Recent Effort

Lastly, the writer has grounds for believing that in many cases the utilities will not rest their cases for a final decision before an elected state judiciary, but will try to find grounds for appeal because of fear of receiving a biased opinion.

A move in recent years which promises to do more toward reducing refunds, though it will not solve the regulatory problem, is use of the temporary rate order. So far five states have enacted legislation of this nature.³⁴ New York has been most successful with its law, which has been upheld by the highest state court.³⁵ The New York law provides that the Commission may fix a temporary rate sufficient to provide a return of not less than 5% upon the original cost less accrued depreciation, and to adjust in its final order any errors that may be made in fixing temporary rates. The new Pennsylvania law goes even farther and provides that, if the company does not have continuing property records,

"... then the Commission after reasonable notice and hearing, may establish temporary rates which shall be sufficient to provide a return of not less than an amount equal to the operating income for the year ending December thirty first, one thousand nine hundred thirty five, or such other subsequent year as the Commission may deem proper . . ."³⁶

The Pennsylvania law was held to be unconstitutional by a federal court in October, 1938.^{36a}

Use of the temporary rate order is not new, for in 1922 the New York Commission attempted to use it against the

to Improve Rate Regulation: Temporary Rate Orders in New York," 13 *Journal of Land & Public Utility Economics* 78-86 (February, 1937).

³⁶ Laws 1937, No. 286. See D. L. Marlett, "Pennsylvania's New Utility Laws," 13 *Journal of Land & Public Utility Economics* 322 at 324 (August, 1937).

^{36a} *Edison Light & Power Co. v. Driscoll, et al.*, District Court, Eastern District of Pennsylvania, October 10, 1938.

New York Telephone Company, but it was found unconstitutional by the United States Supreme Court on the grounds that the Company had no remedy if the rates proved confiscatory and no early date was fixed by the Commission for a final hearing.³⁷ The present laws endeavor to overcome the shortcomings of the older law by providing for compensation in the future if such temporary rate as is set is found to be too low. Interpretation of the present laws by the United States Supreme Court is yet to be made, but the Court has agreed to hear an appeal from the recent Pennsylvania law decision rendered by the federal district court.^{37a}

The temporary rate order has much to recommend it, economically and administratively. It makes for rate reductions today instead of five to fifteen years from today; it gives an opportunity to discover the effect of lower rates upon revenues. In addition, the temporary rate order eliminates the impounding of funds and expensive refunds.

Other remedies which have been suggested include use of the sliding scale, such as has been adopted in Washington, D. C.³⁸ The sliding scale would eliminate refunds and make for more rapid adjustments but it has the difficulty of re-

quiring an agreement between company and commission on the value to be placed on the property, and its adoption is based upon a voluntary agreement between the two. Furthermore, some critics believe it is workable only in certain areas of concentrated consumption. The use of government competition to obtain rate adjustments is no doubt efficacious but of limited application economically, especially to the telephone industry where unity of service is essential. Lastly, another possible remedy is use of some form of fixed rate-base, as an administrative expedient, to keep many cases out of the courts and remove much of the valuation problem.

Conclusion

In summary, refunds are found to be tangible evidence of regulatory ineffectiveness and a most costly and wasteful method of gaining equity for utility consumers. Immediate hope for eliminating refunds appears to lie in the direction of a wider adoption of the temporary rate order. A more thorough "cure" would be a change of attitude on the part of the courts on the matter of valuation and review, but the early elimination of refunds or a changed judicial attitude is not imminent.³⁹

may in the future arrive at an improved position on these matters. For a discussion of this trend see John Bauer, "Important Public Utility Decisions by the Supreme Court and Their Implications," 14 *Journal of Land & Public Utility Economics* 1 (February, 1938). The decision of the United States Supreme Court in connection with appeal from the adverse decision by the federal court on the Pennsylvania law regarding temporary rates may be of great significance in this connection.

³⁷ *Prendergast v. N. Y. Tel. Co.*, 262 U.S. 43 (1923).

^{37a} *Telephony*, December 24, 1938, p. 20.

³⁸ States which have recently passed legislation providing for the sliding scale are: Arkansas (Acts 1935, No. 324, § 20); Massachusetts (Resolves 1935, c. 58); New York (Laws 1936, c. 655); and Pennsylvania (Laws 1937, No. 286).

³⁹ There is some indication that the Supreme Court

Diminishing Returns in the Mining Industry

By WARREN ROBERTS*

SEVERAL factors suggest a reopening of the subject of the rent of mines. The factual material added by mining engineers to the general field of mineral economics, particularly that bearing upon some aspects of mineral conservation, might usefully be classified and, perhaps, restated in economic terms. Thus, a discussion of the proper amount of capital to apply to an ore body or the proper rate for the exhaustion of such a deposit is obviously a discussion also of the operation of the law of diminishing returns in the mining industry. Equally interesting to economists are suggestions by mining engineers that the compound interest rate and the difficulty of rapid exhaustion of an ore deposit may lead a miner to leave ore in his mine that cannot thereafter be recovered;¹ this factor also appears to throw light upon the operation of the law of diminishing returns in mining. On the other hand, the entire field of mineral economics is still somewhat unsettled, for we have not yet agreed in theory upon the manner in which the law of diminishing returns applies to the mining industry, nor upon the way in which the rent of mines arises. Therefore, it is as yet extremely difficult to use these mining data as illustrative matter.

* Assistant Professor of Economics, Western Reserve University.

¹ *Infra*, p. 26.

² For clarity and convenience two controversial subjects must be ruled out of consideration at the outset. I shall arbitrarily follow the classicists in their conclusion that the law of diminishing returns should apply only to land, and shall arbitrarily assume that an ore body can logically be considered a part of land, in spite of several distinctive characteristics. One of these is the fact that, while the principal quality of land is its permanence, the principal quality of an ore body is its impermanence. In many ways an ore body resembles a store of capital goods, the finding and development of which not only involve the use of all other factors of

Much of the difficulty, of course, is inherent in the subject, for a complete parallel does not exist between the utilization of soil and the utilization of ore. Certain qualifications must be introduced,² but the similarity is close enough for practical purposes. The problem, therefore, is to define the operation of the law of diminishing returns in mining and to explain the rise of the rent of mines, in light of the factual material provided by mining experience and to relate this theory to the general tendency to "gut" ore deposits.

Very much of the uncertainty surrounding the subject of the rent of mines, in modern economics, may be attributed to the fact that the two outstanding contributors to the field—F. W. Taussig and Alfred Marshall—disagreed over the application of the law of diminishing returns to mining. They were agreed that the owner of a better mine received a rent, but Marshall did not believe with Taussig that the tendency to lessening yield with increasing depth was a true illustration of the law of diminishing returns. He did not, apparently, believe that the law of diminishing returns applied in any way to a mining operation.³

production but amount, in fact, to the costs of production of the deposit itself. By the time the mine is under operation its value springs primarily from the utility so added and to the operator the ore is a produced capital good. On the other hand, two characteristics tend to place it within the category of land. It cannot be increased after the period of prospecting and development is passed any more than can land, and for this reason it seems to fall within the category to which even the conservative might well apply the law of diminishing returns. (Marshall, *Principles of Economics* (London: Macmillan Co., 1920), 8th ed., p. 169.) In the second place the rate of its exploitation is somewhat limited by the configurations of the earth. This natural limitation to speed of output is the principal justification for the inclusion of ore within the category of land.

³ *Ibid.*, pp. 166-7, 290, 438-9. For a discussion of the (Footnote 3 continued on page 22)

Rent is normally expected to arise only when successive applications of capital and labor diminish in effectiveness, so that the value of the product in the market is enough to bring a surplus to the better grade of natural resource. What, therefore, are the practical obstacles which, according to mining engineers, slow down the production of ore, and what relation do they have to the general theory of the law of diminishing returns?

It should be noted at the outset that the limitation of output is not the wish of the mine owner, for he has two reasons for haste. The rapid exploitation of a deposit will not only lower certain operating costs but will also substitute present income for future income. The costs lowered by greater speed of mining include those which, like the charge for pumping, vary with the time necessary to remove the ore.⁴ The factor of time preference, to be considered in detail in another connection, probably needs no elaboration at this point. It is enough to establish now that the owner has an unusually keen interest in the quick realization of his profit, and that the owner of the best deposits would, if he could, empty them immediately upon the market.

Led by Herbert Clark Hoover in 1904,⁵ engineers have given constant attention to the nature of the economic obstacles to the rapidity of mining oper-

ations, and the factors most frequently discussed have been as follows:⁶

1. While larger equipment will allow more rapid exploitation of deposits and thus lower certain of the fixed costs, "the costs of this equipment should be considerably less than the saving to be effected" and the equipment, therefore, should not exceed "average need during the certain life of the mine."⁷

2. Investments must be withheld until development work has given a substantial promise of the future of the deposit.

3. Even if, later, the deposits are found to exceed those for which equipment was originally planned, the patchwork character of additions to that equipment will make for inefficiency of operation.

4. Overproduction of metal will depress the price.⁸

These practical observations may be translated into economic terminology in this manner: The limited usefulness of capital, either in developing or in operating a mineral deposit, expressed here in terms of the fear of high interest or amortization charges (No. 1), bears definitely upon the law of diminishing returns, for it reduces the speed of profitable output and results in a rise in the price of metal. The fear of injury to market price (No. 4), on the other hand, raises a third problem and, as we shall see, seems partially to explain Marshall's position. The fact that a capital investment may eventually prove to have been too small (No. 3) is related more to the phenomenon of quasi-rent than of rent, but bears directly upon mineral conservation and will be

(Footnote 3 continued from page 21)

relation of mine royalties to mine rent, see John Orchard, "The Rent of Mineral Lands," 36 *Quarterly Journal of Economics* 290 (February, 1922).

⁴ H. C. Hoover, "The Economic Ratio of Treatment Capacity to Ore Reserves," in *The Economics of Mining*, edited by T. A. Rickard (New York: McGraw-Hill Co., 1907), p. 173.

⁵ *Engineering and Mining Journal*, March 24 and August 18, 1904. See also discussions by Spilsbury, Lawrence, Ingales, Brown, Denny, Palmer, and editors by T. A. Rickard, *Ibid.*, p. 173.

⁶ The following four factors are listed both by H. C. Hoover, *The Principles of Mining* (New York: Mc-

Graw-Hill Co., 1909), c. 1 and by T. J. Hoover, *The Economics of Mining* (Stanford University Press, 1933), p. 162. One of the elements they mention, however, will be omitted in this paper because of its doubtful economic significance, to wit: "The theory of maximal rate of mining, if carried to its logical extreme, would lead to the depletion of mineral resources at an alarming speed, which in the end would be contrary to the interests of all." (T. J. Hoover, *Ibid.*)

⁷ H. C. Hoover, "The Economic Ratio of Treatment Capacity to Ore Reserves," *op. cit.*

⁸ See also Finlay, J. R., *The Cost of Mining* (New York: McGraw-Hill Co., 1920), 3rd ed., pp. 32, 60.

discussed in that connection. We shall consider in order, therefore, the factors of interest charges, amortization of capital, depression of market price, and, finally, the effect of limited facilities upon the gutting of mineral deposits.

The economist can easily carry over from his discussion of land utilization the fact that one effective limit to the speed of operation is the dependence of increased output upon more capital investment. It is obvious that, even when the ore deposit is large enough to amortize the capital charge, the interest charge will add to the unit cost of operation, and can be pushed beyond the point of diminishing returns only when market price justifies it. To create more working space more shafts must be sunk and tunnels must be run from more directions, and this will mean a heavier interest charge against the ore. The slowness of development work offers a similar problem, as does the fact that there is no known method of holding the tunnel against the downward pressure of the earth, except to keep the tunnels sufficiently narrow to utilize the walls as supports for the roof.⁹

This is roughly the same difficulty that faces the farmer in plowing. He may overcome the physical opposition of the earth more rapidly but the time saved must be balanced against interest on the additional machinery. This factor of the heavier interest charge, arising through the effort to overcome more rapidly the inertia presented by the physical characteristics of the earth, would rise as a problem even if deposits were unlimited in size and depletion were not an important consideration.

The most interesting and characteristic limit to the speed of mining operations, however, has to do with the size

of the ore body and the amortization of the capital investment, rather than the interest on it. The clothing of a dead mine, remarked H. C. Hoover, is of little value, and against the larger present value of profits engendered by rapid exploitation must be charged any capital investment not entirely used up in the operation of the mine. This limitation to the amount of fixed capital will limit, in turn, the daily output of ore, and even though there may be many small and rich mines, therefore, their slowness of operation will cause a rise both in the price of the metal and in the rent to the mine owner. Even though capital may be applied beyond the point of diminishing returns in the better deposits, they will be unable to satisfy the market and the price will be high enough to give a profit to the operator of less productive mines. This, as a peculiar cause of the rise of the rent of mines, emphasizes the resemblance of ore to an accumulated, and fixed, supply of exhaustible raw material. But it is nevertheless true that this problem of amortization of the capital charge as well as the weight of the interest rate illustrates the real effect of the law of diminishing returns on the mining industry, for both result in a limitation upon the speed of mining operations and make profitable the operation of less efficient mines.

But the next limit to the use of capital is somewhat different in nature. The mining engineer's insistence that one of the limits to the speed of mineral production is the fear of depressing the price is oddly reminiscent of Alfred Marshall's contention that a mine is akin to nature's reservoir:

"The more nearly a reservoir is exhausted the greater is the labour of pumping from it; but if one man could pump it out in ten days, ten men could pump it out in one day; and when once empty it would yield no more. So

⁹ See Bureau of Mines, *Information Circular* 6107, p. 26, for one illustration of this difficulty.

the mines that are being opened this year might just as easily have been opened many years ago; if the plans have been properly laid in advance, and the requisite specialized capital and skill got ready for the work, ten years' supply of coal might have been raised in one year without any increased difficulty; and when a vein had once given up its treasure, it could produce no more.¹⁰

Let us consider, for instance, the case of a large porphyry such as that at Chuquicamata, Chile, or, as Finlay suggested, the Lake Superior Iron Mines with several hundred million tons of ore in sight.¹¹ While there will be some physical restraints to the speed with which the ore is taken from a large mine, so that the law of diminishing returns might eventually limit the rate of output, and while the life of the mine might set some distant limit to the investment of capital, neither of these elements need be the *effective* factor in determining the size of the investment. The large operator would avoid the exploitation of his mine at a rate which would lower market price beyond the minimum cost of labor and capital necessary to production and, indeed, he might be expected to avoid, when possible, a lower than oligopolistic price. It follows logically that the use of labor and capital would not be pushed beyond the point of diminishing returns, for to do so would raise costs and the market can easily be supplied without such intensified effort. It does not follow, of course, that if demand should increase so that ten men should attempt to produce in one day what one man formerly produced in ten, the results would be proportional to the effort. Mining experience appears to indicate the contrary.

It should be added that for any one mine only one of the limits to the application of capital (interest on capital, amortization of capital, or fear of flood-

ing the market) is likely to be effective. An engineer with experience in large iron ore deposits will tend to emphasize the danger of driving down prices rather than any phase of diminishing returns.¹² A gold mining engineer will tend to emphasize charges for interest or amortization¹³ rather than danger of flooding the market. To classify mines in another manner, the most frequent check upon the operation of large mines, especially those operated by steam shovel, appears to be fear of effect upon market price, while small mines are affected primarily by the desire to avoid high amortization expense.

Diminishing Returns and Depletion

These illustrations outline the conditions under which the speed of operation in mining must be limited, and suggest at the same time a reason for the scarcity of metal. At any one time additional applications of capital to a given body of ore will yield decreasing increments of product and this diminishing return curbs the output of ore and gives a differential return to the better mine. But still another factor limits the supply of metal. Most texts today suggest that the law of diminishing returns is illustrated not by the considerations outlined in the foregoing paragraphs, but by the tendency to lessening yield with increasing depth of operation. These two distinct, if contemporaneous, processes should not be confused. *At any one time*, as has been demonstrated, the company must speculate on the profitability of the use of more or less capital to increase or decrease the rate of exploitation of the deposit. The final decision may depend upon the state of the market or the size of the deposit, for if the price is high it may pay to enlarge the facilities for removal

¹⁰ *Op. cit.*, p. 167.

¹¹ *Op. cit.*, p. 60.

¹² Finlay, *op. cit.*, pp. 31-45.

¹³ Hoover, H. C., *The Principles of Mining*, *op. cit.*

of ore from the mine and, if the deposit is large, a large mill may be profitable. *Over a period of time*, on the other hand, the mining company will find it necessary to add each day to the capital used to exploit the deposit, for as a result of the previous day's operation the available ore is farther from the mouth of the mine. Thus, as time passes, the tunnels or stopes must be lengthened to maintain any speed of production.

But while, against Marshall's judgment, the phrase "diminishing returns" has often been used to cover a wide variety of economic phenomena, there are several disadvantages to an expansion of the term to cover depletion, even though depletion is important as one of the determinants in the price of metal. As we have noted, the problem of diminishing returns is one which faces the entrepreneur at any one time, and involves an estimation of the relative profitability of different combinations of capital and labor with a *given* quantity of land.¹⁴

Depletion, on the other hand, occurs over a period of time and involves a change in the character of the supply of the factors of production. For clarity, if for no other reason, it is advantageous to separate in theory the two coincidental factors. Obviously, also, the point of diminishing returns changes as does the face of the body of ore, for not only is the character of the ore different, but it lies farther within the bowels of the earth. Much the same problem arises in the cultivation of tobacco land, when the exhaustion of one plot leads to cultivation of another lying farther from the market. While the price of tobacco might rise, it does not follow that the return to the landlord must do likewise, for the point of diminishing returns has risen with the

price. There is no reason to expect that he will push the application of capital farther beyond the new point of diminishing returns than he formerly pushed it beyond the old.

In the same fashion, but much more rapidly, the mine owner finds that the surface of the ore body retreats from day to day, or even from moment to moment and if he wishes to continue in business he must increase his investment accordingly. But only when price rises enough to encourage an even more rapid increase in investment will capital be pushed farther beyond the point of diminishing returns, or the differential rent of mines rise. It is not probable that such a rise in price will be brought about by the depletion itself. Rather, the contrary is to be expected, for as the price rises to encourage exploitation of the retreating ore, new mines,¹⁵ formerly submarginal, will come into production and the price will not rise as rapidly as costs in the older mines. Even if the mines were inexhaustible, therefore, continuous production would tend to lessen the amount of differential rents, so that in an older country all mines may tend to operate at about the same costs, and any attempt to speed the output of ore will not only run into the law of diminishing returns, but, as Marshall suggested, will lower market price to an unprofitable degree.

An increasing demand for ore, therefore, will result in its rise in price—both because of depletion and because of the operation of the law of diminishing returns—and the disinclination of nature to allow more rapid extraction of ore will allow rents to rise in the better mines. Let us now turn to a consideration of a few of the problems of mineral conservation that spring directly from the effort

¹⁴ See Marshall, note on the law of diminishing returns, *op. cit.*, p. 170.

¹⁵ Assuming technique of production and demand to remain constant.

of a mine owner to exhaust his deposit as rapidly as possible in the face of this niggardliness of nature.

Conservation

The inclination of the mine owner to leave ore in his mine has long been the object of attention by students of geology and mining engineering. Not infrequently the remaining ore is never thereafter recoverable and the subsequent loss to mine owner and to society has been somewhat disturbing. The waste has appeared under several conditions, but most often in the operation of small mines, or in the colloquial "pot-holes." A prospector who finds a small deposit will develop and exploit it as rapidly as possible to obtain a grubstake with which to continue search for a more valuable mine. He appears to give the most frequent example of what in the Rand is called "over-mining"¹⁶ or what the American engineers more expressively term "gutting" or "picking the eyes out" of a deposit. The ore left¹⁷ in this case might have been worked to yield more than wages at the time the mine was first operated, but to reopen the diggings and replace the rotted timber and rusted pipes would in many cases be unprofitable.

Operations of a similar character, on the part of larger enterprises, have recently been defended by W. C. Hotchkiss and R. D. Parks in a publication by the American Institute of Mining and Metallurgical Engineers.¹⁸ The greater value of present income over future income, as calculated by the compound interest

rate, furnished one reason for neglecting lower grades of ore. Thus, they say, suppose a mine in which there are 4,000,000 tons of ore minable at the rate of 100,000 tons a year. The entire amount will yield a profit of \$1 a ton, but 2,000,000 tons or half the deposit can be mined at a profit of \$1.50 a ton, and 1,000,000 tons of the best ore at a profit of \$2 a ton. If the total is mined over a 40-year period, the present value of the \$4,000,000 profit is \$1,104,690.¹⁹ If, on the other hand, only the richest quarter of the deposit is exploited, over a period of 10 years, the present value of the \$2,000,000 profit will be \$1,224,800, or 10% more than if the whole ore body is mined. If, finally, the richer half of the mine is exploited, over a period of 20 years, the resulting \$3,000,000 profit has a present value of \$1,320,630, or an increase of 20% over the profits from the 4,000,000 tons. Thus any physical limitation to rapid exploitation of the mine will compel the miner to choose between the mining of all the ore as he works through the deposit or the concentration of his efforts on the best ore first. If, as in the foregoing problem, he elects to remove only the best half of the ore, he will leave half of the deposit in the mine, but he will earn the greatest present value of profit and might find it possible later to recover part of the remaining ore. The loss to posterity lies in the ore not later recoverable. The gain to the present generation is divided between some producers who receive higher profits and the public that pays a lower price because of the greater speed of metal production.

¹⁶ I.e., the mining of ore above the lowest grade in the mine and the neglect of the lower grades.

¹⁷ For convenience in presentation I shall continue to designate as "ore" the rock left in a mine solely because of the haste of the owner. Strictly speaking this is not "ore" for, as will be demonstrated, to extract such material would probably decrease rather than increase his profit.

¹⁸ "Total Profits vs. Present Value in Mining," *Technical Publication No. 708*.

¹⁹ Calculated at the rate of 8% discount on future income and a 4% rate on sinking fund to replace the capital investment, by the so-called Hoskold formula. (Baxter and Parks, *Mine Examination and Valuation* (Houghton, Michigan: Michigan College of Mining and Technology, 1933), Part II.)

The relation of this problem to the law of diminishing returns is obvious, for if it were not for the niggardliness of nature all the ore would be removed, as usually happens with low-grade porphyries mined by steam shovel. The heart of the above problem is the assumption that the 4,000,000 tons of ore can be mined only at the rate of 100,000 tons a year, and it must be assumed that the bottle neck is not the fear of lowering market price as much as the fear of too large an investment of capital in the mining operation. Given a certain investment in the mine, there is a recognizable kinship between the lone prospector, picking the eyes out of his mine, and the stockholder demanding high immediate profits. If the prospector's preference is higher than the prevailing interest rate, it is because he is more sure that with a small grubstake he can find his Eldorado. Otherwise these two are brothers under the skin.

From the point of view of economic theory a valid distinction exists between the influence of this factor of time preference as a reason for the neglect of low-grade ores, and the factor of the fluctuating price level, for under a temporary stimulation of boom prices a part of the increased returns to the mine owner resembles a quasi-rent rather than a rent. It is true that a fluctuating price level will, in practice, be a more effective cause of the gutting of an ore deposit than will the factor of time preference by itself. Under high war prices the mine owner in the foregoing problem will have several reasons for the neglect of low-grade ore. In the first place, there will be more ore to neglect, for that which was rock in 1913 became ore under the benediction of war demands; but either the

physical limitations of the mine itself or the inadequacy of the plant, or both, would present a choice between high present profits and complete exploitation of the deposit, and a neglect of the lower grade ores would probably follow.²⁰ In the second place, the certainty of a future fall in profits per pound of metal will be added to the factor of time preference as an incentive to an attainment of the highest possible present dividends, and more attention will be concentrated upon the ore most easily and profitably exploited. Finally, a rise in the price of, say, copper, will frequently increase the dollar profit of low-grade ore and the mine owner will have a third reason to concentrate upon the best ore.

But while, in actuality, this factor of fluctuating prices appears to be more effective than the compound interest rate alone in the determination of ore to be selected, the principal short-run limit to the amount of ore that can be handled in any one day will often be the size of the mill rather than the physical limitations of the earth, and a boom, by definition, does not allow time for adjustment of the plant except in patchwork fashion. To the extent that the limitation of the plant, rather than the natural limits of the mine, keeps down production and allows the higher price, the result is a rise in quasi-rents rather than in rents. A somewhat similar problem arises in the course of operations in other forms of business when, during the peak of prosperity, a rush of orders suggests an expansion of production facilities. W. M. Stevens in his *Financial Organization and Management*²¹ notes that when, in such a circumstance, it becomes increasingly difficult to fill orders, the firm

most mines. Ore increases in amount with a rise in price of metal, so that ore involves both accurate development work and accurate forecast of metal prices.

²¹ New York: American Book Co., 1934, p. 293.

²⁰ In this connection it might be pointed out that the third limitation to speed of operation of a mine, mentioned above (p. 22), applies at some time or other to

should skim the cream of the business available rather than build eleventh hour facilities that cannot be sufficiently amortized to show a profit.

While it is not the purpose of this article to discuss the regulation of "over-mining," the recent efforts in the Rand to discourage the neglect of low-grade ores is worth some attention. Unusual interest in the question of mineral conservation has grown from the steady deepening of the mines and a corresponding rise in costs which gravely threatened the future of this, the most important industry in the Rand Region.²² Devaluation of the pound, however, so lowered the gold cost of operation as to double the probable life of such deposits, and under a "new policy" the mining companies prepared to change their estimates of the ore available for profitable exploitation.²³ Certain stockholders, on the other hand, felt that a high present value of profits was preferable to length of life,²⁴ and the government, to insure that all low-grade ore be exploited, provided in the Gold Mines Excess Profits Duty Act of 1933 that profits from rich mines should be taxed at a higher rate than profits from low-grade ores. The government thus not only took back in the form of a tax certain of the unearned increment to mine

owners accruing from devaluation of the pound, but gave a more vigorous expression to widespread disapproval of "over-mining."²⁵

To attempt to transfer this method of taxation to other than certain forms of gold mining would involve tremendous theoretical and practical difficulties. It would be necessary, for instance, to compare the loss to future generations from present neglect of low-grade ores with the gain to present producers or consumers, and it would be necessary also to consider in these calculations the possibility of recovering low-grade ore temporarily left in the ground. The emergency of a war might demand rapid output at any cost.²⁶ Among the problems would be that raised by varying classes of ore. A law which might be applicable to low-grade porphyry mines would be inapplicable to the mining of copper veins. Not only should we need detailed information on each mine affected, but, as in the Rand, we should probably have to approach the solution by some process of trial and error.²⁷ As yet we do not even know the extent to which this law of diminishing returns in the application of capital to mining has caused the mine owners to gut their mines, though it is well recognized that such does tend to be the result.

²² *Ibid.*, August, 1934.

²³ 38 *Mining Magazine* 325 (June, 1928); see also Whittaker, "Gold-Mining Taxation in South Africa," 28 *American Economic Review* 688-701 (December, 1938).

²⁴ 48 *Mining Magazine* 67, 94 (February, 1933); 51 *Ibid.* 67 (August, 1934).

²⁵ After several revisions, the tax of 1936 ranged from 15% to 50% of mine profits, depending upon the nature of the ore. (54 *Ibid.* 195 (April, 1936).)

²⁶ Finlay, *op. cit.*, p. 2.

²⁷ 52 *Mining Magazine* 22; 51 *Ibid.* 259; 53 *Ibid.* 95, 130, 325.

The Nebraska Public Power Districts

By WILLIAM F. KENNEDY*

THE announcement that Nebraska will soon be served under a system of public ownership of electric facilities on what is practically a state-wide basis has aroused much interest. Consideration of this policy naturally raises many questions which cannot be adequately answered at this early stage of the scheme. However, this article presents three aspects of the problem which can be treated at this date—namely, physical set-up, administration, and finance.

The most striking feature of the plan is that it is not being administered by the State of Nebraska or one of its departments but by three districts separately organized under the public power and irrigation district act of 1933.¹ This act is of the home-rule type. Under its provisions a district may be initiated by a petition of 15% of the qualified electors in each municipality within the proposed district. The Department of Public Works determines whether the proposed district is feasible and for the convenience and welfare of the public. All powers of the district are vested in a board of directors chosen by the electors of the district. These powers include sole authority over issuance of indebtedness and power to fix and collect adequate rates, with the added provision that the directors may agree with holders of debentures as to maximum and

minimum rates. The policy of home rule was reiterated by an amendment in 1937 to the effect that "the Nebraska State Railway Commission shall have no jurisdiction over the rates, tolls, rents and charges of districts organized under this act."²

The home-rule type of district does not provide the advantages of state-wide planning and control.³ The fact that the organization and administration of the Nebraska program are handled by a district of the limited, home-rule type, while its final objective—state-wide public ownership and operation of electric facilities—requires a much larger administrative area, indicates one of the fundamental problems of the program. In considering this problem, attention will first be given to the functions and activities of the individual districts, which to date have mainly been directed to the planning and erection of physical plants.

Physical Features of the State-wide System of Public Ownership

The Nebraska system for state-wide operation of electrical facilities under public ownership is based on the hydro-electric plants and transmission lines of three projects organized under the public power district law of 1933, popularly

describes this type of district thus: "... the state itself may organize power districts whenever it sees fit, without even previously consulting rural or urban areas. The state authority likewise has the power to alter boundaries, approve or order consolidations or dissolutions of two or more districts, and thus make certain that less profitable territory will not be overlooked in the formation of these ad hoc units. Final approval, moreover, no longer rests on popular election but rather on the consent of the state body. Under older laws directors were elected; the more recent laws provide instead for appointment by the governor, another indication of the turn from home rule methods."

* Graduate Assistant in Economics and Commerce, University of Wisconsin.

¹ Neb. Comp. Stats. 1929, Ann. Supp. 1933, §70-701 to 715.

² Laws 1937, c. 152.

³ Mr. Robert D. Baum in an article on "Power District Legislation," 26 *National Municipal Review* 28 (January, 1937) notes that the advantages of state-wide planning and control have received increasing weight in most states, with the result that the tendency in adopting recent power district legislation has been toward the centralized type of power district. He de-

known as Senate File No. 310.⁴ These three projects with their abbreviated and their legal names are: (1) the Sutherland project or The Platte Valley Public Power and Irrigation District; (2) the Tri-County project or The Central Nebraska Public Power and Irrigation District; and (3) the Columbus project or The Loup River Public Power District. (See Map I.)

1. *The Sutherland Project.* The Sutherland project embraces five counties—Keith, Lincoln, Dawson, Buffalo, and Hall. The district was organized in June, 1933. For many years prior to that time, the irrigators east of the city of North Platte had been working on plans whereby they could be supplied with supplemental water. A survey costing \$25,000 was made about 1921 or 1922 but nothing tangible came of it.

In recent years the construction of the Pathfinder and Guernsey reservoirs on the North Platte River and the increasing demand for water along the upper part of the stream resulted in a shortage for late summer irrigation on the farms east of North Platte. A reservoir was needed to store water for use during periods of shortage. The eight canals in this section between North Platte and Kearney had been constructed at a cost of about \$3,000,000 and the Sutherland project "was conceived and is being made to provide storage for these canals in order to protect the investment already made."⁵ The 176,000 acres lying under these canals were already irrigated and the new project did not develop or bring into production any new land.

The proposed project had to justify itself as an irrigation development by proving to the PWA that there was sufficient demand for supplemental water

by existing irrigators. "Before funds were made available by PWA, it was necessary for the District to enter into contracts for the actual sale of 100,000 acre feet of storage water at \$1.00 per acre foot."⁶ These contracts were signed with the eight irrigation canal organizations between North Platte and Kearney and approved by the PWA.

The project had been organized as a public power and irrigation district with the apparent motive of obtaining dual use of the water. Irrigation districts have quite frequently installed power facilities to help finance the enterprise. The Modesto and Turlock Districts in California furnish a good illustration of the dual-purpose project. The Sutherland project has installed generators with a capacity of 29,000 kva., making possible the annual production of about 100,000,000 kwhs. of firm power.

The Sutherland project obtains its water from the North Platte River by means of a diversion dam located three miles west of Keystone and east of the Kingsley dam of the Tri-County project. The supply canal, connecting the dam and the Sutherland reservoir, is about 33 miles in length. An interesting feature of the canal is the method used to cross the South Platte River. This is accomplished by an inverted siphon of reinforced concrete construction with an inside diameter of 14 feet and a length of about 7,500 feet. Beyond the South Platte River the water continues in the supply canal until it empties into the Sutherland reservoir which occupies a depressed area of some 5,000 acres and has a capacity of 180,000 acre feet.

By means of an outlet canal the water is carried some 22 miles from the Sutherland reservoir to the regulating reservoir

Irrigation District," 43 *Proceedings*, Nebraska State Irrigation Association 133 (1935).

⁶ *Ibid.* at p. 137.

⁴ See footnote 1 above.

⁵ Price, D. D., "The Platte Valley Public Power and

which has a total capacity of about 21,000 acre feet. From here the water passes through penstocks to two turbines and then into the South Platte River. The water contracted for by the irrigation and canal companies is delivered to them in the channel of the Platte River below the tailrace of the power plant.

The power house is located about 5 miles south of the City of North Platte. It houses two 18,000 hp. Francis-type turbines directly connected to two 14,500 kva. water-wheel-type generators, the turbines operating under a net head of 202 feet. A 13,800-volt line, 5 miles in length, extends to North Platte and connects with a step-down substation of 3,000 kva. capacity. A 69,000-volt line, 62 miles long, terminates at a 2,000 kva. substation at McCook. The 115,000-volt line is about 220 miles long and connects with the power plant of the Columbus project at Columbus and with substations at Elm Creek (5,000 kva.) and Grand Island (10,000 kva.) It is estimated that the system will produce 100,000,000 kwhs. of firm power annually.

The total estimated cost of the project is about \$11,400,000, all of which has been expended or contracted for except \$1,250,000, which amount has been allotted to the project by the PWA. At December 31, 1937, the project had received from the PWA a total of \$10,165,000 of which \$2,580,000 was a grant and the balance of \$7,585,000 was in the form of a loan.

Because of the heavy demand upon the waters of the North Platte above the diversion dam of the project, "the flow of the North Platte River and the storage facilities of the Platte District project would probably not be sufficient

to provide continuous operation of the project at maximum capacity."⁷ The committee headed by Dr. Elwood Mead arrived at the same conclusion and recommended that the Keystone (now called the Kingsley) reservoir be built to provide adequate storage for both the Sutherland and the Tri-County projects. The recommendation was accepted and construction of the Kingsley dam is under way. It is located upstream from the diversion dam of the Sutherland project, which is advantageous, since its releases can be diverted through the Sutherland system, being converted into power and released near North Platte, from which point it can be diverted either by the Sutherland irrigators to the extent of their priorities, or allowed to pass on to the diversion dam of the Tri-County project. With the Kingsley reservoir in operation the stream flow of the river will be adequate for the purposes of the Sutherland project.

The Sutherland project was substantially completed in December, 1935, when water was first placed in the canals. "During the course of the early season-ing operations an ice jam occurred which caused an overflow at the south end of the siphon. The damage resulting was repaired during the summer of 1936."⁸

Correspondence with the Acting General Manager summarizes the status of the enterprise:

"... the Sutherland Project is still in the construction phase; however, for a brief period, namely December 20, 1936 to May 1, 1937, the project was operated on a test basis and delivered energy to three private utility companies. This operation was interrupted by a break in the Siphon and at present the Siphon has been repaired and the District is storing water in its reservoir and making plans for some improvements to the

⁷ Prospectus of the Platte Valley Public Power and Irrigation District, Guy C. Myers, Agent, New York, p. 11.

⁸ *Ibid.*, at p. 2.

system this year, with a view to placing the Project in operation late in 1938."⁹

Application for additional funds to make repairs and improvements in the amount of \$1,061,000 was granted by the PWA and this work is proceeding.

2. *The Tri-County Project.* The Tri-County project originally embraced three counties but as officially organized under Senate File No. 310 it included four—Gosper, Kearney, Adams, and Phelps. Of all the present projects it has the most ambitious program for irrigation. Plans are being made to irrigate an area of 220,000 acres,¹⁰ and perhaps even more acreage will eventually be irrigated, since the application of the district estimated its irrigable area at 500,000 acres.¹¹

Although the PWA required the Platte Valley Public Power and Irrigation District to enter into contracts guaranteeing annual gross revenues of \$100,000 from sale of irrigation water, no similar condition was imposed upon the Tri-County project, despite the fact that the Board under the chairmanship of Dr. Elwood Mead reported:

"... from the standpoint of rainfall the eastern part of the district lies on the borderland where irrigation is necessary and where farming by rainfall alone is possible. This will tend to make a certain percentage of the landowners slow to change from the crops and present method of farming to the crops and more intensive cultivation required by irrigation. This renders it desirable that action be taken that will show the sentiment of the landowners within the proposed district both as to their intention to irrigate when water is provided and their willingness to pay the estimated yearly cost."¹²

The administrators of the program

believe that there will be ample demand for irrigation. In a letter to the writer on November 11, 1938, Mr. George E. Johnson, Chief Engineer and General Manager, stated:

"We have not had any extensive campaign on selling water to the farmers as they seem to be perfectly willing to sign up without much urging. We are irrigating approximately 200,000 acres and our financial studies show that \$2.50 an acre will take care of all of our operation and maintenance costs, our service charges on the bonds and give us a considerable surplus. . . . Also, our studies show that as soon as water is successfully applied to the land, the value of this land will be increased from 100 to 200 per cent and under such conditions there is no reason to believe that any farmer will wish to cancel his water contract after he starts using water."

The contracts contain a provision that cancellation shall only become effective upon three years' written notice.

The area proposed to be irrigated is about 20 miles in width and about 120 miles in length. It is a tableland south of the Platte River and numerous reports testify to the quality of the soil. However, since 1900 the farming population has been dwindling. Some 20 years ago a study was made to determine the validity of the opinions concerning the diminishing fertility of the soil. The opinions were found to be justified and later reports estimate that the soil has lost 40 or 50% of its nitrogen content.¹³ Irrigation will provide sufficient moisture for raising alfalfa and other legumes which will help to restore the nitrogen content of the soil.

The Mead Board studied this situation in 1935 and reported:

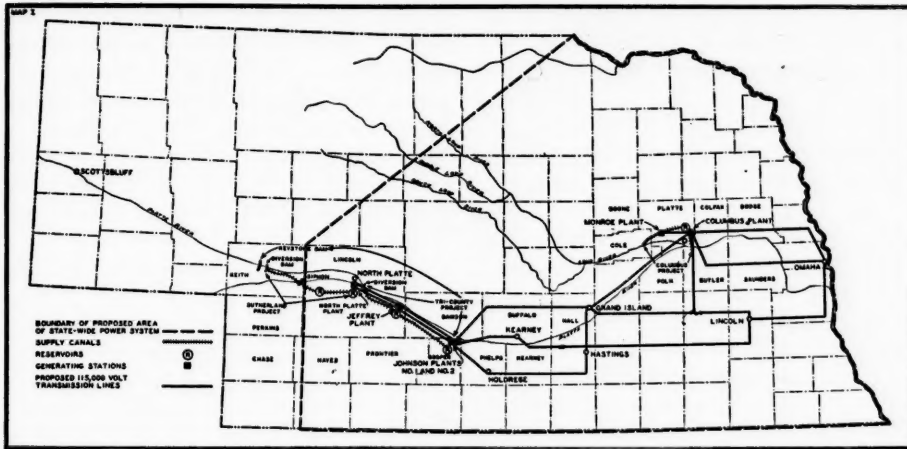
⁹ Correspondence with Mr. Gerald Gentleman, Secretary and Acting Manager, May 13, 1938, North Platte, Neb.

¹⁰ Prospectus of the Central Nebraska Public Power and Irrigation District, Guy C. Myers, Agent, New York, p. 8.

¹¹ Department of Roads and Irrigation, *Report*, 1935-6, p. 390.

¹² *Report of the Mead Board to Secretary Ickes*, December 20, 1935.

¹³ Canaday, R. O., 43 *Proceedings*, Nebraska State Irrigation Association 65 (1935).



This map was filed with Bill of Complaint, *Iowa Nebraska Light & Power Co. v. Ickes*, Sup. Ct. of District of Columbia. The corrections are from *The Nebraska Blue Book* (1936), p. 394.

"The lands of the Tri-County irrigation district are admirably suited to irrigation. The surface slopes are gentle and regular and the soil is of great depth and of superior quality. Irrigation will be a great factor in maintaining fertility and increasing the acreage value of crops, . . ."¹⁴

The present project, like the earlier proposals, contemplates use of water for supplemental irrigation. It has been observed, for instance, that where a snow fence has caused snow to accumulate, the crops along such a line are very much more successful than in the rest of the field. The quality of the soil is such that it can retain large amounts of subsurface water over long periods of time. Such a use of water will be highly economical since much of the stream flow of the Platte goes unused in the non-seasonal period.

The central feature of the Tri-County project is the Kingsley dam and reservoir. The Board headed by Dr. Elwood

Mead, in its report to Mr. Ickes, recommended that it be built, since the efficient operation of the Sutherland and Tri-County projects would not be possible without more adequate storage. The Kingsley dam will form a reservoir with storage capacity of 2,000,000 acre feet plus an additional 400,000 feet for flood control. The dam will impound much water that is going to waste at present in the Platte.¹⁵ Even in the driest of years the project will be able to pick up some 500,000 acre feet of water that would normally be wasted. This, in addition to the storage capacity of the reservoir, is estimated to be sufficient to insure efficient operation of both the Sutherland and Tri-County projects.

It was earlier pointed out that the reservoir will stabilize the flow of the river to the benefit of the Sutherland project. In fact, the benefits of the dam

¹⁴ Report of the Mead Board, December 20, 1935.

¹⁵ "Analysis of run-off records found in Biennial Reports of the State Department of Roads and Irrigation, Water Power and Drainage, discloses that for the 20-year period, allowing for all prior down-river appropriations and needs, there has been a possible storable use of 19,352,000 acre feet of water, or an average of

960,000 acre feet per year. . . In our year of greatest water deficiency—1936—593,000 acre feet of water was lost to beneficial use because there was no reservoir to withhold it until growing crops required it." (Johnson, G. E., "The Central Nebraska Public Power and Irrigation District," 45 *Proceedings*, Nebraska State Irrigation Association 95 (1937).)

will inure to the whole valley. Every summer the river runs dry, creating a serious problem where sewage is emptied into the stream. Every spring flood waters run through the valley; regulation of the stream flow will diminish the bad effects of these great variations.

The dam is located about 50 miles west of the city of North Platte, a short distance upstream from the diversion dam of the Sutherland project. It is of hydraulic-fill type, 1,000 feet wide at the base, 162 feet high, and two miles in length. Water released from the dam will be carried down the channel of the river to a point just beyond North Platte, where the water will be diverted into a supply canal. This diversion dam is about $1\frac{3}{4}$ miles below the tailrace of the Sutherland project's power plant.

The diversion dam will direct water into a supply canal to the south of the Platte River. This canal extends for a distance of 21 miles to the Jeffrey Canyon regulating reservoir, the capacity of which is 15,000 acre feet. From here it will go through the Jeffrey Canyon power house, the tailrace of which feeds a supply canal extending to the Johnson Canyon regulating reservoir, a distance of about 40 miles. At this point the water will pass through Johnson Plant No. 1 and $3\frac{1}{2}$ miles below it will pass through a second power house (Johnson Plant No. 2). Water may be returned to the Platte River from the tailrace of this plant or may be taken into the irrigation canals of the project.

The features of the power plants may be summarized as follows:

Item	Generators	Capacity of Each (kva.)	Total Station Capacity (kva.)	Gross Head (Feet)
Jeffery Canyon	2	10,000	20,000	116
Johnson No. 1	2	10,000	20,000	116
Johnson No. 2	1	20,000	20,000	146
Total Project*	5	—	60,000	—

*Estimated annual production—500,000,000 kwhs. (firm power).

This project will include about 334 miles of 115,000-volt transmission lines and about 325 miles of 34,500-volt lines. Substations will be located at Holdrege and Hastings. The transmission lines and substations are estimated to cost about \$3,843,000, of which some \$451,000 has been spent or contracted for.

The total cost of the project is estimated at \$30,096,000, of which 45% is to be in the form of a grant and the balance in the form of a loan from the PWA. The estimate is divided in this way:

Item	Total Estimated Cost	Amount Spent or Contracted for
Kingsley dam.....	\$13,680,000	\$3,834,000
Canals and regulating reservoirs.....	6,218,000	204,000
Power houses.....	2,765,000	small
Transmission lines.....	3,843,000	451,000
Irrigation.....	3,590,000	2,269,000
Totals.....	\$30,096,000	\$6,758,000+

The Tri-County project is not as far advanced as the other projects, since it only received its first funds in December, 1935. Correspondence with the Chief Engineer and General Manager of the project elicited the information that it is expected the entire project will be completed by November, 1939. He further stated: "Yesterday [April 28, 1938] we started the irrigation on some of our first farms to be irrigated. By November, 1939, we expect to have all of the irrigation complete on 220,000 acres."¹⁶

3. *The Columbus Project.* The Loup River Public Power District, organized under Senate File No. 310, is situated in Platte County. It is not engaged in irrigation, limiting itself to the generation and transmission of electricity.

¹⁶ Correspondence with Mr. George E. Johnson, Chief Engineer and General Manager, Tri-County project, Hastings, Neb., April 29, 1938.

The project draws its water for the generation of electricity from the Loup River, which is fed by a huge natural reservoir, the Sandhills of Nebraska. The Sandhills store an immense quantity of water (500,000,000 acre feet), a portion of which (about 4,000,000 acre feet) is released annually regardless of temporary dry spells. Since the river has a fairly uniform year-round flow, no provision is made for water storage, other than the regulating reservoir (Lake Babcock), which has a total capacity of 11,000 acre feet, of which 6,000 acre feet are effective in the generation of power. However, this combination will not insure the same regularity of operation obtainable by the other two projects, which have more adequate water storage. The Columbus project has an advantage over the other projects because its location in the eastern section of the State makes it nearer to the markets for power.

One of the big problems confronting the Columbus project was siltation. Tests by United States Army Engineers have shown that the Loup River at Columbus carries a heavy load of sediment.¹⁷ An illustration of the problem is supplied by a dam on the Niobrara River, a stream with the same characteristics as the Loup. Sand accumulated for 10 miles above this dam, resulting in large claims for land damages. Since the land above the Columbus dam is quite valuable, the danger of future damage claims must be avoided if possible. The loss in efficiency of the dam for power generation resulting from silt deposits must also be taken into consideration. Although it would be technically possible to solve the problem of desiltation quite readily, the question

of costs had to be considered, for an efficient hydro-electric project cannot be too heavily burdened with charges for desiltation.

The requirements of desiltation resulted in the special features of design. A weir (a low wall of concrete) 1,320 feet long extends across the river. The diverted water is passed through gates to the settling basin where the sand and silt are allowed to settle before the water is passed over the skimming weir into the canal. The basin is 10,000 feet long, 200 feet wide, and 16 feet deep. Sand and silt deposited in the basin are removed by an electrically driven floating dredge, designed to remove about 1,200 cubic yards of silt per hour. The discharge is carried through flumes and deposited along the river bank below the dam, where it is picked up and carried away by flood waters.

From the settling basin the water passes through a canal, 11½ miles long, to the Monroe power house, which contains three generators with total capacity of 8,250 kva. This plant is equipped for complete remote control from the Columbus power house. The tail water from the Monroe plant passes through a 13-mile canal to the regulating reservoir, known as Lake Babcock. The purpose of this reservoir is to provide storage for the canal flow in order to meet daily fluctuations in demand for power. The water is fed through a supply canal, 1½ miles long, to the Columbus plant, which contains three generators, each of which has a rated capacity of 14,000 kva. The normal operating head at this plant is 112 feet. The discharge is carried 5½ miles to the Platte River, about one mile below the confluence of the Loup and Platte Rivers.

The project will have a total installed capacity of 50,250 kva. with an estimated annual production of 182,000,000

¹⁷ Florr, Eric, "The Loup River Public Power District," 43 *Proceedings*, Nebraska State Irrigation Association 141 (1935).

kwhs.¹⁸ Power from the Monroe and Columbus plants is delivered to a switchyard adjacent to the latter plant. The 115,000-volt line of the Sutherland project connects into this switchyard. From here 115,000-volt lines extend to Valley and Lincoln and a 69,000-volt line, designed for future operation at 115,000 volts, leads to Norfolk. The total length of transmission lines will be about 175 miles.

The total estimated cost of the project is about \$11,000,000, which has been allotted by the PWA. Of this amount approximately \$9,000,000 has been expended or contracted for. As of December 31, 1937, the district had received from the PWA \$2,052,208.85 as grants and \$6,700,000 as loans.

This project is entirely completed with the exception of some work in progress on transmission lines. The status of the enterprise as of May, 1938, is described by engineering consultants in these terms:

"1. Generating facilities of the Loup River Public Power district have been completed for a number of weeks and the two hydro-electric plants are now in condition to carry a capacity load. Work is still in progress on some of the transmission lines.

"2. Prospects for sales and arrangements with private power companies are now involved in the negotiations to purchase the private companies, which it is believed are near consummation.

"3. It is hoped that the districts will be able to enter into interchange agreements with the municipal plants. At present, the City of Hastings has signed such an agreement and several other smaller municipalities have expressed interest.

"4. The Loup River district is at present furnishing energy to both the Central Nebraska Public Power and Irrigation District and the Platte Valley Public Power and Irrigation District under special agreements. When the other two districts are in a

position to produce power themselves the lines of all three districts now connected will provide for interchange of energy between them. The North Loup and Middle Loup projects, which have no generating facilities plan to distribute power purchased from the three larger districts to help defray irrigation expenses."¹⁹

Administration

Given three independent organizations with home-rule administration, all of which operate in a single river basin and within a single state, it is to be expected that conflicts will arise among them. They have the same objectives; they use a scarce resource of the region—water; and they render the same type of service—the production and distribution of electric power and, in two of the projects, the additional service of supplying water for irrigation.

Some coordination among the three districts was achieved from an unexpected source. These projects were financed by the Federal Emergency Administration of Public Works (PWA) and that body, in making its loans and grants, set up certain standards, either as required by the statute providing for the loans (Title II of the National Industry Recovery Act, June 16, 1933) or as required in the judgment of the Administrator.

The PWA, in financing power projects throughout the nation, adopted a fairly uniform loan and grant agreement. The coordination achieved by this device among the three Nebraska projects consisted in the main of uniform standards of labor conditions and supervision to insure that expenditures were reasonable and advisable from an engineering standpoint.

Coordination through the Loan Agree-

¹⁸ Condra, G. E., "Conservation of Land and Water Resources of Nebraska," *Bulletin 14*, Conservation and Survey Division, University of Nebraska (1936), p. 37.

¹⁹ Correspondence with Mr. M. W. Max, Information Dept., Wellwood Engineering Co., Lincoln, Neb., May 17, 1938.

ment. An examination of the loan agreement of January 15, 1934, between the Loup River Public Power District and the Government (which was similar to agreements signed by the other districts) shows the powers of this central administrative body, the PWA. Part I of the agreement provides, among other things, that "The Government shall be under no obligation to purchase Bonds beyond the amount necessary, in the judgment of the Government, to complete the Project."²⁰ It is further provided that "The Borrower will expend the funds . . . only for such purposes as shall have been previously specified in certificates accompanying the requisition to the Government and approved by the Government."

Various provisions were made as to the method of fixing rates. They must provide revenue sufficient at all times to pay proper operating and maintenance charges, to pay the principal and interest on all obligations when due, and to provide a specified allowance for depreciation. The rate schedule must be non-discriminatory; differentials must be based upon actual differences in costs; and the rate schedule must be satisfactory to the Government.

Part III of the agreement lists many requirements relating to labor standards to be maintained in construction of the projects. These include, among other things, a 30-hour week, just and reasonable wages, minimum wage rates as may be prescribed by the Government, and compensation insurance.

Part IV provides that reasonable books and accounts be kept and that the Government shall have the right to make reasonable inspections and to require the furnishing of information and data to its engineers during construction.

²⁰ Loan Agreement with Loup River Public Power District, January 15, 1934.

Section 9 of Part IV specifies that the Government will be under no obligation to purchase bonds or make any payment on account of the grant, "if the Government shall not [when it shall request] be allowed representation satisfactory to it in the management of the System throughout the life of the loan." It is difficult to see how this provision gives the Government coercive power over the district "throughout the life of the loan," because the district would have sold its bonds to the Government and received its grant upon completion of the project. As long as it required no additional funds beyond this date, it could refuse representation to the Government without fear of harm from this provision. However, Section 8(d) of Schedule A of the agreement reasserts this power and declares that "failure or refusal of the Borrower to allow the Government representation in the management of the System, when so requested in writing by the Government" shall be considered a default.

Possible Attempts at Coordination by the PWA. The PWA had loaned millions of dollars to both the Columbus and the Sutherland projects; therefore it was interested in the profitable operation of both. On the other hand, each project had been initiated by local groups who were concerned only with the success of their own project. Such autarchy would lead to inefficiency in the instance of these two projects, for the Columbus project had practically no water storage and its production of firm power would suffer with stream-flow variations. An interchange agreement between the Columbus and Sutherland projects would obviate this difficulty and would increase the reliability of the service of both.

In June, 1935 the PWA announced that the total allotment of the Columbus

project was increased by \$1,400,000 and that of the Sutherland project by \$2,200,000. The release announcing such increases stated:

"The increases in both allotments were approved on condition that the applicants enter into an agreement for interchanging power. Regulations governing the interchange and the annual settlement between the two districts for power interchanged are to be under PWA supervision and control."²¹

The greatest need for coordination of the projects arose after PWA approval of the Tri-County project's application for loans and grants. The efforts of the farmers of the Tri-County region to obtain irrigation finally met success when the PWA approved a loan and grant of \$10,000,000 to the District in September, 1935. This concession to the interests of the Tri-County groups created serious problems for the PWA. In the first place, the strong opposition of the directors of the Sutherland district had to be overcome and, in the second place, the Tri-County project would incur expenditures of about \$30,000,000, more than doubling the PWA investment in Nebraska power districts and adding some 200,000,000 kwhs. of firm power to be disposed of annually in the Nebraska market.

According to the bill of complaint filed January 27, 1936 in *Iowa-Nebraska Light and Power Company v. Ickes*,²² Mr. Wingfield, Assistant Director of PWA Power Division and Mr. Farbach, Assistant Director of PWA Legal Division, arrived in Nebraska from Washington about November 1, 1935 with "a proposed contract for consolidating the three districts." The bill of complaint

further relates that they were unsuccessful in getting the directors of the Columbus and Sutherland districts to accept the contract but that they did succeed in obtaining the approval of the officers and directors of the Tri-County district.

The bill of complaint states that, after the directors of the Sutherland project publicly announced their refusal to sign the agreement, Clark Foreman, Director of the Power Division of PWA, announced: "it [Sutherland district's refusal] just means the district will be limited to the original \$7,500,000 allotment."²³ Even if PWA officials had refrained from making statements of this sort, the directors of the districts must have realized the power of PWA to control them to some extent by refusing further loans.

About the middle of November, 1935, PWA appointed a board to study and report upon the Nebraska situation to Administrator Ickes.²⁴ The report pointed out that the flow of the Platte River was not sufficient to permit the most efficient operation of the Sutherland and Tri-County projects without additional storage. It was recommended that such storage be provided by the construction of the Keystone (now called Kingsley) reservoir, with a capacity of about 1,500,000 acre feet.

Also the report pointed out a deficiency in the PWA supervision of construction:

"... the PWA organization to date has not included adequate detailed filed supervision and approval of the various steps of design and construction. This has been due primarily to the fact that the State Director's office in Nebraska is organized for the super-

²¹ Bill of Complaint, *Iowa-Nebraska Light and Power Co. v. Ickes*, Supreme Court of Dist. of Columbia, p. 20.

²² *Ibid.*, at p. 25 ff.

²³ *Ibid.*, at p. 26.

²⁴ The Board consisted of Dr. Elwood Mead, Chief of the Reclamation Service, Chairman, J. D. Ross of the

Securities and Exchange Commission, R. V. L. Wright, a consulting engineer, George F. Harley of the PWA Engineering Division, and K. Sewell Wingfield of the PWA Power Division. The report was presented at a conference of PWA officials and representatives of the three districts held in Washington in December, 1935.

vision of numerous small projects but not for projects of this magnitude. It is necessary that this deficiency in PWA supervision be remedied."²⁵

The most interesting part of the report dealt with the administrative weakness of the existing set-up of the three districts:

"... the social benefits and financial liquidity of each of the projects may be seriously questioned so long as their proposed operation is not in some way unified. Under the terms of the Act creating these districts no method is provided by which the three districts may be merged into one and their operation and liabilities combined. . . . the Board has to recommend that by agreement between the several districts and the Public Works Administration, through appropriate provisions in the Loan and Grants Agreements, an agency be created for the supervision of construction, the marketing of electric power, operation of the electric system, and the apportionment of net revenues arising from the sale of power and irrigation to conform to the financial necessities of the several districts."²⁶

It was suggested that during the construction stage, the chairman of this agency, who should be appointed by the PWA, should act as resident engineer on all projects. "His authority to organize and administer these projects in the public interest should be unquestioned."²⁷

The transmission system being developed by the Power Division of PWA and representatives of the districts was approved by the Board. It proposes three 115,000-volt lines from the western-most plant to the eastern part of the State, connecting each plant into the system by at least two lines and each important load center is in a loop permitting service from either direction.

Coordination Agreements with the Districts. A substantial part of these recommendations was embodied in the

agreement presented to the districts in January, 1936. The agreement was signed by the three districts, the directors of the Sutherland project finally signing on February 6, 1936.²⁸

This agreement provides for an Advisory Committee of not more than five members, one to be appointed by each of the three districts and the others by the Administrator of Public Works. The Advisory Committee is given power:

1. To make all sales of power for the joint account of all three districts;
2. To formulate rate schedules, which must be approved by the districts;
3. To study possible markets for power in the entire territory of the State lying east of a line from the state line of South Dakota to the northwest corner of Lincoln County and hence south to the Nebraska State line (This area comprises $\frac{2}{3}$ of the area of the State and within it occurs 90% of the present power consumption of the State);
4. To recommend construction of secondary transmission lines and local distribution systems by each district;
5. To collect and distribute all revenues from sales of power. Briefly, the revenues remaining after the payment of operating and maintenance charges of each district are to be distributed among the districts on the basis of their net cost, which is defined as the total cost of the project, less the grant received from the Government;
6. In case of default by any district, to withhold such revenue in a special account until the default is cured;
7. To maintain and operate all transmission and distribution lines of the districts;
8. To dispatch load for the entire system.

Provisions were also inserted relating to coordination of construction by the districts on the basis of the Advisory Committee's recommendations. A declaration of policy regarding power rates was made. It provided in brief that preference be given "counties, municipalities, public corporations and cooperative organizations" and that contracts

²⁵ Mead Report, Exhibit H. Bill of Complaint, *op. cit.*, at p. 104.

²⁶ *Ibid.*

²⁷ *Ibid.*, at p. 105.

²⁸ *Omaha Bee News*, February 7, 1936, p. 1.

with private companies or individuals shall contain a provision authorizing termination within a period not exceeding five years. A further provision stated that the amount of firm power not contracted for sale to anyone plus the amount of firm power available through cancellation upon notice of not exceeding one year shall be not less than 50% of the then firm capacity of the systems.

The provisions of this agreement best protect the interests of the Federal Government, since power revenues are to be distributed on the basis of net cost of the project—in effect on the basis of the amount of PWA loans received by each district.

This coordinating agreement was short-lived. It was terminated by agreement among the parties about May, 1936. A similar set-up was provided in the interconnection agreement of January 20, 1937 between the Loup and the Tri-County districts in connection with the trust indenture of November 1, 1936. The later agreement will not be reviewed in detail because it is substantially the same as the original agreement, the only important difference being that the Sutherland district is omitted.

The directors of the Sutherland district have opposed the entry of their district into such alliances, as evidenced by the fact that they were the last to sign the original agreement. Such opposition is probably based on judgments similar to those expressed by Mr. Donald D. Price, Chief Engineer and General Manager, in a speech before the 1935 Convention of the Nebraska State Irrigation Association. Connection with a state-wide transmission system was not opposed but a desire was expressed that the district remain a separate financial entity.

"The District has, at all times, had faith

that the project could be completed within the limits of the \$9,700,000 allotted for construction, and has felt that it will be possible to liquidate the loan, amounting to approximately \$7,500,000, if the District is permitted to complete its development as planned, and is not forced into entangling alliances from outside sources."²⁹

Coordination provided under the present two-party agreement is similar to that provided under the original agreement and the results obtained under the two-party agreement, when coupled with negotiations with the Sutherland district under the guidance of PWA officials, may be the same as those anticipated under the original agreement. Assuming this to be true, or even that the Sutherland district will eventually accept such an arrangement, the benefits attainable will still be less than those possible under a completely unified development such as the Tennessee Valley Authority.

Possibilities in a State-wide Program.

The Nebraska program has for its objectives the protection of the PWA loans and the securing of the most efficient production and distribution of electric and irrigation services. It is true that some attention has been given to flood control, although this is not a major problem of the region. However, occasional floods do occur, such as the Republican River flood in 1935. Provision is being made in the Kingsley dam, now under construction, for 400,000 acre feet of capacity for flood control. This dam, "starting with water at the full operating level, will handle two floods equal to the Republican flood of 1935 in one week."³⁰

The opportunity for a broader program exists in the Platte Valley. Nebraska is one of the most important, if not the most important, agricultural

²⁹ *Op. cit.*, at p. 137.

³⁰ Johnson, G. E., *op. cit.* at p. 98.

state in the Union. A program of research and cooperation with the farmers, such as TVA is carrying on, might achieve greater results than the TVA can hope for.

Over $\frac{1}{2}$ the area of the State is classified as defective or "problem" acreage.³¹ The irrigation projects and better control of the Platte River will improve some of this land and cheap electricity will make pump irrigation feasible for other areas. Since the problem of conservation of water resources is so intertwined with the problem of land conservation, a state-wide agency might logically be given the task of handling both.

Soil erosion is of special significance to dam builders, since siltation can destroy their efforts. The Columbus project has made a sizable investment and will incur large operating expenses for desiltation. Although the existence of silt in the Loup River may be unavoidable because of the type of soil it must cut through, still a unified development would have created more interest in reforestation and soil erosion control on the upper reaches of the river.

Nebraska has great need for a forestry program, for less than 2% of its area is in trees and most of these are in the extreme eastern part of the State.³² Trees on the plains afford protection to crops and live stock and provide a valuable product in the form of fencing and rough lumber. A report of the TVA states that its chief interest in forestry "is derived from the fact that forests help to hold the soil and to store water."³³ TVA has also promoted the planting of the "shipmast" locust, "one of the best and cheapest gully stoppers

ever discovered," and nut trees of many varieties as a source of food for men and animals.

Since water is so scarce in Nebraska, the program should give consideration to the development of recreational areas. TVA reports a surprisingly large public response to the provision of recreation opportunities.³⁴ The conservation of wild life habitat is well suited to a plan of river development, especially in a farming region where hunting, fishing, and trapping can provide both recreation and income. This, unfortunately, has been overlooked in the Nebraska scheme.

The first step recommended is that the Nebraska Legislature merge the three districts and form a state-wide agency. The problems of the projects are not the responsibility of the 10 counties that initiated their formation but rather the interest of the entire State. The nature of the problems of the region and the possibilities of a unified development of the Platte River Basin justify such an authority. This suggestion assumes that the agency will not limit itself to a program of efficient distribution of electrical and irrigation services but will attempt to achieve the benefits of unified development under a program similar to that of the Tennessee Valley Authority.

An argument can be made that a state-wide agency is too limited in this instance and that the entire Platte River Basin should be the appropriate administrative area. The interstate conflicts over use of the water resources of this river could be cited to bolster such a position.

Nebraska has been engaged in litigation with Wyoming and Colorado since 1934 over use of the water of the North

³¹ Condra, G. E., *op. cit.* at pp. 14-5.

³² Jenkins, M. B., "Forestation and Nebraska's Future," 44 *Proceedings*, Nebraska State Irrigation Association 99 (1936).

³³ *Annual Report*, 1937, p. 45.

³⁴ *Ibid.*, pp. 46, 49.

Platte River. Litigation is a poor method of reaching a proper solution in the case of this river, for the state on the upper part of the stream can take all the water it deems within its rights during the period of litigation. If this occurs during a "dry cycle," then great damage has resulted for the state farther down the stream and when the question is settled the "wet-cycle" may have come, rendering the question less pressing to all parties. In the meantime, the first state has obtained what it wanted—water in the critical years.

The argument for a larger administrative area could be supplemented by pointing out that the social interests involved in this program extend throughout the entire basin.

This suggestion of a larger area must be rejected for the present on two grounds. First, Bureau of Reclamation projects on upper portions of the river have been organized under limited programs and it would be difficult to disturb such projects and obtain their interest in such a far-flung enterprise. Second, the public power objectives are the most important ones in the scheme, both from the point of view of proportion of expenditures and political significance. Those interested in this policy will probably encounter some difficulty in obtaining even the assent of the State of Nebraska, as a political unit, in such a power policy, while the political and legal obstacles to extending the program throughout the river basin seem almost insuperable at present.

Financing the Nebraska Public Power Districts

The Nebraska power district legislation of 1933, under which the present districts were organized, contemplated the financing of the enterprises by federal funds, for Section 70-712 pro-

vided that the project may only be mortgaged in order to borrow money from the Federal Government or its agencies. In this respect the legislation was a response to the recovery policy of the Roosevelt Administration, one feature of which was a program of federal loans and grants to encourage states and localities to undertake self-liquidating public works.

Up to the present the entire financing of the districts has been accomplished by loans and grants from the PWA but the districts are now attempting to obtain additional funds through private investment channels in order to acquire properties of private electric utilities.

The nature of the financial arrangements between the PWA and the districts can be explained by reference to the loan agreement with the Loup River Public Power District, since the agreements with the other districts were similar.

Under this agreement the borrower would sell and the Government would purchase revenue debentures not to exceed an aggregate of \$6,300,000. The Government agreed to grant the borrower an amount not to exceed 30% of the total cost of the project, provided that such grant and loan together shall not exceed \$7,300,000. The bonds were negotiable coupon bonds, paying interest of 4% per annum.³⁵ They were special obligations of the borrower and were secured by a pledge of the gross incomes and revenues of the system and were additionally secured by a mortgage from the borrower to a bank or trust company, as trustee. The original agreement was superseded by one which provided for a bond issue of \$12,000,000 for the Loup River Public Power District.

The trust indenture, dated November

³⁵ Loan Agreement, Loup River Public Power District, January 15, 1934.

1, 1936, provided for the refunding of the original issue of debentures in the amount of \$6,700,000 and for the issuance of an additional \$5,300,000 of indentures for improvements on the original project. The trustee, in this instance the First National Bank of Omaha, authenticates and delivers debentures upon requisition of the district, which requisition must state the amount of debentures proposed to be issued, and must be accompanied by plans and estimates of costs of the improvements to be undertaken. The proceeds from sale of the debentures (and all sales have been made to the PWA) are placed in a special account with a bank, which account is known as the Construction Fund. Fees, expenses, costs of construction, and interest on debentures outstanding until completion of the project are payable from this account. Requisitions for use of such funds must be signed by the president or vice president and treasurer of the districts, must be supported by a resolution of its board of directors, and must be approved by its manager, engineer, and counsel.

All revenues received by the district—and it is to be remembered that such revenues will be allocated to the district by the Advisory Committee, which has control over all sales of power—will be paid to the trustee and will be segregated in a Revenue Fund. The first deduction from this fund is payments to the State of Nebraska for the water leases (\$10 per 100 hp. of water appropriated). The next \$75,000 to be accumulated in this fund will be paid to the district for deposit in a bank under an account known as its Operating Fund. All "Expenses of operation and ordinary maintenance of the System" are payable from this account and the intention is to maintain

this fund continually at an amount equivalent to the estimated expenses of operation for one month.

The next deduction from the Revenue Fund is for a sinking fund sufficient to meet interest charges on all debentures outstanding and to redeem debentures maturing during the next year.

Next provision is made for an "Extraordinary Maintenance Fund" and the balance of revenues remaining is then to be devoted to the Sinking Fund. The Extraordinary Maintenance Fund is reserved for "all extraordinary [as distinguished from ordinary provided for in Section 2 of Article V] repairs, renewals and replacements necessary to keep and maintain the physical properties of the System [but not the Rural System] in a good state of repair . . ."³⁶

The ordinary repairs are referred to as "ordinary maintenance" in Article V and one gathers that "extraordinary maintenance" refers to what is commonly called depreciation. Since a charge for redemption of maturing debentures is prior to the extraordinary maintenance charge and since the debentures mature in increasing annual amounts from 1942 to 1974, it might develop that revenues would not be ample to build up any very substantial depreciation fund. The cost of replacing short-lived property might well exceed the amount in the depreciation fund and the system might be forced to go into the market for funds on short notice at an unfavorable time. Better practice would prescribe that charges to a fund to provide for this contingency should be prior to charges for amortizing the PWA debt. Estimates of the flow of future revenues to these projects are speculative at the present time and such estimates should not be used as a basis for rigid schedules of debt amortization, without prior provision for depreciation,

³⁶ Trust Indenture, Loup River Public Power District, p. 35, November 1, 1936.

until it is observed that the projects can meet them and in addition provide themselves with a cushion for contingencies.

In order to find a market for their power, the districts are attempting to acquire the facilities of private utilities, although they are keeping in mind the possibility of proceeding with the construction of competing facilities, if acquisition proves too difficult.³⁷

As pointed out in a joint letter from the districts to the Administrator:

"The present indentures securing the indebtedness of the Districts to the Public Works Administration provide for a first lien on all revenues, not only from properties constructed with PWA funds, but from all after acquired properties. Therefore, in order to finance the proposed purchase with funds borrowed from private banking interests, the indentures securing PWA loans will have to be modified."³⁸

The letter stated that the districts had agreed among themselves which private facilities would be acquired by each. The prices to be paid for these properties were based on valuations made under the supervision of Mr. J. D. Ross, by methods to be described later. These purchases will be financed by the issuance and sale to private banking interests of serial revenue 4% debentures. Acquisition of the properties of the first 10 companies will require the issuance of debentures in the principal amount of \$20,865,000. Acquisition of the other three companies will require an additional issue of \$70,000,000 of debentures.

The proposed method of allocating

revenues to provide payment of principal and interest on public and private debentures is described in the joint letter in the following terms. The private debenture trustee will receive the revenues from ultimate sales of power, out of which will be paid to the PWA debenture trustee the so-called power charges, based on the following schedule of rates which

"is calculated to be sufficient to pay costs of operating and maintaining generating facilities and to service the PWA debentures in full when ultimate development of the market will absorb the entire generation of the hydro plants."

Schedule of Power Charges

1. Firm power produced by hydros, replacing power now produced by acquired facilities, will be sold to the distribution department at rates equivalent to production costs, if power had been produced by acquired facilities, but not to exceed \$.007 per kwh.

2. Firm power produced by hydros in excess of power used to replace power from acquired generating facilities will be sold at a cost not to exceed \$.007 per kwh.

3. Power produced by acquired facilities will be sold to the distribution department at actual cost.

4. Dump power produced at hydro plants will be sold to the distribution department at a cost not to exceed \$.003 per kwh.

After the private debenture trustee pays such power charges and all other operating expenses of the distribution

District of its electric facilities in Nebraska. The Central District proposes to issue revenue bonds in the aggregate sum of \$21,500,000 for financing the acquisition of the facilities south of the Platte River and the Loup District proposes to issue revenue bonds in the aggregate sum of \$5,000,000 for financing the acquisition of facilities north of the Platte River. This article was completed before the hearing was held and limitations of space do not permit a complete analysis of the problems raised in this connection.

³⁷ Release No. 3302, Federal Emergency Administration of Public Works, May 11, 1938.

³⁸ *Ibid.*, p. 3. PWA gave its approval to such modification in the indentures of The Central Nebraska Public Power and Irrigation District and The Loup River Public Power District on December 2, 1938. The Federal Power Commission on December 27, 1938 approved the disposition by the Iowa-Nebraska Light and Power Company to The Central Nebraska Public Power District and The Loup River Public Power

department, the remaining revenues are to be applied as follows: (1) to provide a Renewal Fund for renewals and replacements of distribution facilities; (2) to the service of private debentures, including Interest and Amortization Funds and a Reserve Fund; (3) the surplus to the PWA debenture trustee. All irrigation revenues will be paid to the PWA debenture trustee directly.

Valuation of Private Facilities to be Acquired

The method of valuation of the utilities to be acquired in Nebraska has been watched with extreme interest in utility circles. If the PWA approves the Nebraska method, it is expected to indicate "the long-awaited policy of the Administration toward private companies in the areas where the government has spent huge sums on public power systems."³⁹

The Nebraska utilities engaged Mr. J. D. Ross as advisor on this problem and his assistants, headed by Mr. R. W. Beck, have developed a system which has been characterized as purchase on the basis of the going value of the private utility. Briefly, this evaluation is arrived at by estimating the costs which will be involved in acquiring and operating the property; the amount by which the estimated income of the property exceeds such costs determines how much the district can afford to pay for the property.

A form was developed as an aid in these computations. Its central feature is Item 46, Adjusted Net Revenue. This represents "balance available for interest and depreciation" or net operating income, adjusted for probable loss of revenue and non-recurring items, such as holding company fees and regulatory

expenses. Obtaining Item 46 is largely a matter of copying it from the books of the company. Item 46 must cover allowances for two items:

- (1) Reserves as set forth in Items 62 to 65;⁴⁰
- (2) Amount for service on bonds to be issued in acquiring the property.

This amount for service on bonds is obtained from Item 46, by modifying it to provide for two adjustments:

- "(1) An amount that will assure satisfactory and adequate rate reductions;
- "(2) An amount for cushion, depending on a number of factors relative to wage levels, operating condition of property, business prospects, and any other influence which might affect the business from a long-range viewpoint."⁴¹

Items (1) and (2), immediately above, are usually lumped together and may be thought of as an estimated margin of safety, a measure that every purchaser makes, at least mentally, before buying a business property, whether it be a moving picture house in a Wisconsin hamlet or a state-wide public utility enterprise. It is an amorphous concept at best, and must always remain such, since it is based on long-term expectations. However, these appraisers have attempted to standardize this calculation by the following method:

"After talking with many of the key employees of the company, observing methods of operation, going over the properties from a physical standpoint, and sizing up the business that they draw upon, one who is familiar with utility operations can arrive at a numerical factor to apply against Line

⁴⁰ Estimates for Reserves:

Replacement Reserve:

- (62) 10% of sales
- (63) Less maintenance
- (64) Replacement reserve

Retirement Reserve:

- (65) $\frac{1}{4}$ of 1% of bonds outstanding

⁴¹ Correspondence with Mr. R. W. Beck, April 5, 1938.

³⁹ *New York Times*, May 15, 1938, p. 1.

46, 'Adjusted Net Revenue.' This factor has varied from 1.1 to 1.75.

"If the company is an exceptionally well maintained institution where they are already paying good wages, charging low rates, with the most efficient operating methods already installed, and where business is constant and growing with excellent prospects for continued advancement, the factor can be in the order of 1.1. On the other hand, if the property proves to be greatly run down, people in the community are not prosperous, employees are poorly paid, morale low, operating methods inadequate and there are other depreciating factors, then the factor will be around 1.75."⁴²

This factor is divided into Adjusted Net Revenues. For example, if Adjusted Net Revenues were \$1,000,000 and the company were in superb operating condition, the divisor might be 1.1 and the amount available for bond service would be \$909,090.90. If the company were in very poor condition, the divisor might be 1.75, and the amount available would be \$571,428.57.

The amount available for bond service must cover:

- Items (53) Cash to company
- (54) Fiscal fee
- (55) Cash for net working capital⁴³
- (56) Extraordinary capital requirements
- (57) Maximum bond discount

All items except "Cash to company" would be relatively fixed; hence the item "Cash to company" would tend

⁴² *Ibid.*

⁴³ Estimates for working capital:

- (59) For acquiring accounts receivable and prepayments (Less Customers' Deposits) estimated at 15% of gross revenue
- (60) For cash sufficient to meet two (2) months' payroll and material and supplies for operating maintenance and normal extensions and resales (5% of gross)
- (61) For cash for normal extensions and betterments for one year estimated at 10% of gross

Total net working capital. (Items 59, 60, and 61.)

to vary almost directly with the adjusted net revenues as modified by application of the factor.

Mr. Beck has pointed out that under public management depreciation is used to retire bonds so that Item 46, which is the balance available for interest and depreciation, where adjusted by application of the factor, indicates the amount annually available for service charges on the bonds, thus limiting the amount of bonds and consequently the amount to be paid for the property.

The device of applying a factor ranging from 1.1 to 1.75 gives this method a ring of scientific accuracy. Assuming that all necessary facts are both available and properly considered and weighted and that the judgment of the appraiser, if not perfect, is at least reasonable, the method does provide a cushion necessary for various purchases, but it does not provide a scientific calculation of the absolute amount of cushion so as to penalize neither buyer nor seller. In the acquisition of long-lived property, this amount is based on long-term expectations, a phrase that means but little more than the simpler word "guess."

The purpose of this system of evaluation is to give the public body assurance, to the extent of the accuracy of estimates, that it will be able to pay all operating and maintenance costs and taxes, that it will have adequate working capital to start with, and that the properties either are in good operating condition or adjustments have been made in the purchase price so that the public body can afford the necessary improvements. These desirable results depend not only upon the accuracy of estimates of accounting items but also upon the reasonableness of the "factor" applied to Adjusted Net Revenues.

The application of this method of

evaluation requires great care and judgment to insure that the projects do not acquire property at such a high price as to handicap them from the start and eventually lead to grave disappointments from the standpoint of public ownership. If the prices paid were so high that the districts could not meet their obligations to investors, it would constitute a "black eye" for public ownership which protagonists of private ownership might utilize as those of the opposite persuasion have used examples of inefficient private ownership.

Conclusion

An exact determination of the future financial solvency of the Nebraska projects cannot be made because there are too many unknowns. Two important contingencies are:

1. *The Amount of Future Sales.* Since liquidation of the PWA loans under the recently proposed financial set-up is based upon credits for power generated at the hydro plants, sufficient quantities of this power must be used in order to provide funds for amortization and interest charges on some \$35,000,000 of PWA loans. The market to be obtained by acquisition of private facilities provides an outlet for about 500,000,000 kwhs. annually, but the private generating facilities to be acquired by such purchase provide a supply of equal amount. The output of the hydro plants is likewise estimated at 500,000,000 kwhs. annually, so that if operation of both the acquired facilities and the hydro plants is to be successful, a larger market must be developed rapidly.

Likewise the municipal plants either have generating equipment or purchase their supply from the private companies. Except for a small amount of municipal

and private generating equipment which may be retired immediately because of inefficiency or high costs, the necessary market must be found in the expansion of average consumption. Some expansion will result from the development of rural business.

2. *The Engineering Feasibility of the Projects.* It may well be that the Platte River does not provide an economic source of hydro-electric development. The former inadequacy of the stream flow will be overcome by construction of storage reservoirs but it may be that such water power is obtained at too great a cost. A part of such costs will be compensated by the values created through irrigation and flood control, but the question still remains whether modern steam plants would not be more efficient.

Technical difficulties have led to the questioning of the feasibility of hydro plants in this region. The difficulties with siltation at the Loup River project may render that investment unsound. Moreover, that project faces additional costs and damages since water from its reservoir escapes through the sandy soil and floods neighboring farms. Engineers hope that such escape will be arrested by the siltation of the pores in the sand, but if this does not materialize, damages will have to be paid.⁴⁴

The Sutherland project has yet to prove its feasibility. The use of a siphon to carry water under the South Platte River presents engineering difficulties and during tests in both 1936 and 1937 the siphon failed, causing damages and halting operations.

The importance of water, since it is the limiting factor in the Great Plains farming communities, has been pointed

⁴⁴ This criticism was made by a reporter for the *Chicago Daily Tribune*, June 2, 1938. Its validity was

not checked by independent investigation. It is presented only as evidence of the nature of criticism directed at the projects.

out. The projects will help solve the water problem through their irrigation projects and better control of the river. Irrigation will not solve the entire farm problem of Nebraska; when these projects are completed, the total irrigated area will only be about 3% of the total farm land. Even in the irrigated regions the entire farm problem will not be solved; the problem has more aspects than productivity of the soil. For instance, it is difficult to see how increasing farm values through irrigation will solve the tenancy problem, since increased returns, in large part, will go to the landlords in higher rents. According to the 1935 Farm Census, 49.3% of Nebraska farms were operated by tenants. The counties to be furnished irrigation by the Tri-County project show the following percentages of tenancy: Adams, 53.3%; Gosper, 52.0%; Kearney, 46.3%; and Phelps, 52.2%. Counties lying under the Sutherland project, which have had appreciable

areas of irrigation for some years, show these percentages of tenancy: Buffalo, 47.9%; Dawson, 51.5%; Hall, 49.8%; Keith, 49.8%; and Lincoln, 48.4%. It is questionable whether more irrigation will deflate these percentages very greatly.

Recent experience of other states reveals that state controlled or centralized power districts are preferable because the advantages of state-wide coordination, planning, and development have attained greater importance. The experience of the Nebraska districts shows the inadequacy of the "home rule" type of legislation, and indicates the necessity for merging the three districts and creating a state-wide agency. The object of the agency should be a broad program for developing the resources of the Platte River Basin, similar to the program of the Tennessee Valley Authority. Greater social values than cheap electricity await development in this great agricultural State.

Chicago Real Estate Bonds, 1919-1938:

I. Corporate History

By GENEVIEVE KOESTER*

LARGE-SCALE financing of real property by means of real estate mortgage bonds and similar securities is a financial development of the post-war period which has received comparatively little attention from students and writers. Official investigations have examined various single aspects of the subject but little information has been compiled to supply a comprehensive and representative view of what has occurred in any particular city where this type of financing has assumed importance.

Since various factors combined to center this new activity in Chicago, real estate in the Chicago area has served as the experimental laboratory in working out the forms and techniques required by this new type of financing. A study of what has occurred in the history of real estate securities in the Chicago area, therefore, supplies a representative view of what has happened in general in large-scale financing of real property. The circumstances surrounding the development and use of these securities made it impossible to obtain an all-inclusive tabulation and analysis of the real estate securities brought out in this area. It was necessary to reduce the scope of this study of Chicago long-term real estate financing to an analysis of various aspects of some of the comparatively well known real estate securities of the area.

* Instructor, College of Commerce and Finance, Drake University.

This article, and one dealing with the market behavior of real estate mortgage bonds which will appear in a later issue of the *Journal*, are based on material presented in a master's thesis accepted at Northwestern University in 1938.

The Securities Analyzed

In order to obtain a representative list of securities, the real estate issues on property in the Chicago area which were carried in the 1936 volume of *Moody's Banks, Insurance, Real Estate and Investment Trusts* were enumerated. This list presented a cross section of issues—issues secured by unimproved as well as improved property, originating from over 50 different houses and ranging in size from \$25,000 to \$15,000,000 at the time of the original offering.

Two sources were available as a partial check on the adequacy of this list of securities. In March, 1932 the Chicago Title and Trust Company started to compile a monthly price series on 100 real estate mortgage bonds on those Chicago buildings on which the original offering was one million dollars or over. It was found that only five issues included in this series did not appear in the tabulation taken from *Moody's*; two of these five were very closely held and three were secured by properties which had been developed for very specialized amusement purposes. The exclusion of this entire group from the list seems justified since the aim was to include real estate securities with a general market. Reference to the price quotations published weekly and semi-weekly by some investment houses which are now specializing in real estate securities showed that the original list included all issues on which the market seemed to be at all active.¹

¹ A comparison with the issues carried in *Poor's Manual of Industrials for 1936* showed that this publication contained reports on only a few of the very large issues brought out in the Chicago area and would not serve as an adequate check.

The original tabulation contained 338 issues of various types of real estate securities which amounted to \$546,983,500 at the time the original offerings were made. Detailed information was difficult to obtain on 36 issues, each of which was originally offered in an amount less than \$475,000. Although this entire group amounted to 10.65% of the total number of issues, it formed but 1.90% of the total dollar volume. It seemed justifiable, therefore, to omit these issues from the detailed study, since only a very small and rather unrepresentative portion of the total amount of securities would be dropped and as a result the remaining material would form a working unit on which comparable data could be obtained. The list of securities carried for more detailed study thus contained 302 issues, whose value when originally offered amounted to \$536,478,500.

Classification of Issues

Type of Financing. For the most part the corporate structure was the basic type of organization for the large-scale financing of real estate, though in a few instances real estate trusts were formed and issued securities. Of the 302 issues 287, or 95.03% of the total number, representing 94.93% of the total dollar volume, were issued under the corporate form of organization.

Bonds of these corporations were responsible for the greatest part of the real estate financing in Chicago. The first type to be developed, and to be used most extensively, was the first mortgage bond. These bonds, whether construction loans or issued after the property was built, comprise 76.49% of the total number of issues under consideration but amount to 67.98% of the total dollar volume.

The leasehold bond, the second most

important type of real estate security both as to number of issues and amount, was used almost exclusively for very large bond issues on downtown office buildings or hotel properties in Chicago. All these issues with the exception of three (\$500,000, \$600,000, and \$675,000, respectively) have ranged in size from \$1,000,000 to the \$7,775,000 issue on the Eitel Central Block. Because of the large size of leasehold issues, the 49 issues in this group account for 21.53% of the total volume of all issues but constitute only 16.23% of the total number.

In this compilation only a few issues represented secondary liens on the property. Only one second mortgage, an issue secured by a secondary lien on the Board of Trade Building, was included. General mortgages were made on the Stevens Hotel and the Union League Club of Chicago; and bonds, which technically held a position similar to debenture bonds secured by the general assets of the property, were issued on property owned by the Edgewater Beach Hotel.

The common stock of the original corporations was held by the organizers of the enterprises and never entered the general market, so that in this compilation of original issues common stock does not appear. Two examples of preferred stock issues are to be noted: 20 Wacker Drive Building and the Burnham Building. In both cases insurance companies made very large loans on a first mortgage on the buildings and additional financing was obtained through \$7 no-par, preferred stock. If a \$100 par value were arbitrarily placed on these stocks, they would amount to 2.23% of the value of the total securities, but to only .66% of the number of issues.

In five cases included in the list, land trusts were formed to hold title to high-

value downtown sites. Certificates were then issued as evidence of proportionate shares in the ownership of the land; no definite face values were shown but the offering price in each case was \$1,000 per certificate, with an annual return of \$55. These certificates would amount to approximately \$12,000,000, or 2.24% of the total amount of real estate securities listed.

The creation of the realty trust was the basic organization for one other type of real estate security. The Edith Rockefeller McCormick Trust, formed in 1924, was the pioneer in this phase of financing and served as a pattern for nine similar organizations which issued securities to the total amount of \$14,087,500. The majority of these trusts issued mortgage bonds in very much the same manner as corporations, though the realty trust known as the Foreman Trust and Savings Bank, Trustee, brought out securities called participation certificates which resembled bonds in every respect but in name.

This analysis of the types of securities showed that, though preferred stock, bonds, and certificates of realty and of land trusts were to be found, the chief interest of the market lay in the real estate mortgage bond of the corporation. These securities, which comprised 94.37% of the number and 92.69% of the total dollar volume, formed the basic group for the compilation of ad-

ditional information on real estate securities.

Types of Property Financed. Corporations were formed and real estate mortgage bonds issued for the financing of many different types of properties. The classification of these properties according to similarity of operating conditions established the following groups: (1) apartments, (2) apartment hotels, (3) hotels (primarily for transient guests but distinguished from apartment hotels by lack of kitchen units), (4) office buildings, and (5) miscellaneous, which includes properties which are designed for highly specialized uses, such as theaters, warehouses, and the like. A classification of the bond issues according to these use-types is presented in Table I.

Variation in the size of the issues explains the difference in the relative importance of the several classifications of property used as security in terms of number as well as volume of real estate offerings. The popular size of issue for apartments was \$770,000; some larger issues were found, but emphasis was on the smaller issues. Therefore, though these formed 28.07% of the number, they accounted for only 18.45% of the volume of real estate securities.

The size of apartment hotel issues also tended to be small, so that the proportion of number of issues and of amount stood at 21.75% and 16.06% respectively. Approximately 1/2 of the issues

TABLE I. NUMBER AND VOLUME OF BOND ISSUES, BY CLASSES OF PROPERTY

Type of Property	Number of Issues	Percent of Total	Amount (000's omitted)	Percent of Total
Apartments.....	80	28.07%	\$91,605	18.45%
Apartment hotels.....	62	21.75	79,995	16.06
Hotels.....	28	9.83	75,558	15.19
Offices.....	59	20.70	162,975	32.76
Miscellaneous.....	56	19.65	87,258	17.54
Totals.....	285*	100.00%	\$497,391	100.00%

* This final total was arrived at by deducting from the first total of 338 issues: (1) the 36 small issues; (2) the 15 trust issues; and (3) the 2 issues of preferred stock.

were for less than a million dollars, with \$550,000 the median size for this type of security.

In the hotel group the amount of the issues proved to be a larger proportion of the total (15.19%) than did the number of issues (9.83%). It might be expected that as a whole all issues of this group would be of larger size, but approximately $\frac{1}{2}$ of the issues were less than a million dollars.

Among the office building bonds large issues predominate, with the result that the issues on this group, though forming 20.70% of the number of issues, comprised 32.76% of the volume. In this group, issues of less than a million dollars are few, one and two million dollar issues having been offered for the most part, although large properties of various sizes were financed up to the maximum of the \$15,000,000 issue on the 208 South La Salle Street Building.

The miscellaneous group of properties is another classification in which the number of issues represents a larger proportion of the total than does the volume, though the difference is very slight (19.65% to 17.54%). In this group the issues are rather evenly divided between those less than a million dollars and those of one to two million dollars, with gradual increases in size to the \$9,000,000 issue of the American Furniture Mart.

Because of the predominance of apartment and apartment hotel issues which tended to be of smaller size, the majority of all issues was under one million dollars. Of the 285 issues in the tabulation, 209 amounted to less than two million dollars. A larger number of issues on office buildings in the two million to three million dollar group brought that group's total up to 27. From that point the size of original issue increased to the maximum size of \$15,000,000, with 37 issues in these larger classifications.

The Pre-Default Period

The first real estate bond issue included in this study group was brought out in 1919 by S. W. Straus & Co. and was for \$1,000,000 to assist in financing the Sovereign Hotel, one of the earliest experiments in the field of apartment hotel buildings. This new financial movement gained momentum from year to year with approximate annual doubling of the volume of new securities to 1926, when the increase over the volume of the preceding year was slight. An actual decrease in volume was registered in 1927, but this was followed by an upward swing in 1928 when the maximum amount of issues was released, totalling \$109,305,000; this marked the virtual end of the issuing period. A few issues were brought out in 1929 and the actual end of this period of financing was reached in 1930 when only two very small bond issues were underwritten.

The volume within each class of property increased or decreased from year to year without any discernible reason or relation to the movement of other groups or to the total volume of bond issues. The apartment hotel, which inaugurated this new kind of financing, was the only type of property on which bonds were issued every year throughout the 12-year period.

During the entire history of the real estate mortgage bond movement the issuing houses were important and vital forces. These institutions were of three types: specialists in real estate securities, general investment houses, and banks or their investment affiliates. The responsibility of these organizations for the issues included here was as follows:

Underwriter	Number of Issues	Dollar Volume
Real estate specialists	190	\$264,905,000
Investment houses...	50	160,000,000
Banking houses.....	45	72,486,000

Organizations of the real estate group were responsible almost entirely for the financing of apartment and apartment hotel properties, although the two dominant organizations, S. W. Straus & Co. and Greenebaum Sons Investment Co., did not restrict their efforts to property of any particular class. The underwriting and sale of the large issues required for financing office buildings and hotels in the loop area and some of the miscellaneous properties were carried out by general investment houses, or groups of houses in many instances. The banks and their affiliates did not specialize in any particular type of property.

The period during which these real estate bonds were floated was one of highest optimism regarding all financial ventures, and a goodly share of intense enthusiasm in Chicago was centered on this new style of investment. The circumstances surrounding the issuance of these new securities were not conducive to the development of sound practices. Among the factors which contributed to the financial difficulties of real estate mortgage bond issues were faulty appraising, unsound lending practices, and the general building situation in Chicago.²

The Default Record

By Years. The era of real estate bond defaults began in 1925 when a few isolated issues were unable to meet some requirement of their loan contracts. In the next few years some defaults occurred but they totalled only 7 issues and amounted to but \$8,275,000. The year 1929 introduced the period of widespread default when 22 issues, aggregating \$29,320,000, failed to meet some phase of their obligations as they came due.

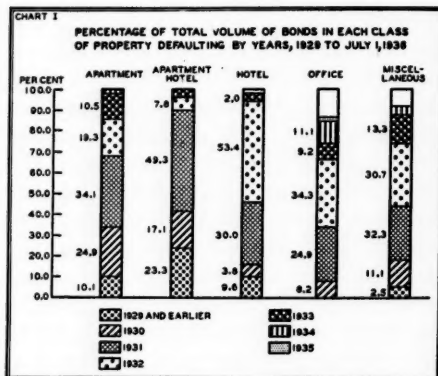
In the following year (1930) the number of defaulting issues and their volume more than doubled—50 issues in a total amount of \$64,095,000. In this year the properties in all five classifications had difficulties; for the first time some of the office buildings and a number of properties from the miscellaneous group failed to earn their charges. But 1931 marked the peak of delinquencies in real estate bond issues; 104 issues defaulted, totaling \$162,116,000 and representing every type of property. In 1932 defaults continued with a total of 67 issues in the amount of \$146,725,000. By the close of this year 250 of the 285 issues were in default, representing \$410,531,000 of the \$494,956,000. The volume of defaults dropped sharply in 1933, when only 20 issues joined the delinquent ranks. This left only 19 issues that were meeting their obligations in full as they fell due. Five from this group defaulted in 1934. By the end of 1934 only 14 issues amounting to \$26,150,000, or about 5% of the total volume of real estate bonds offered, were not in default. A few bond issues which had not defaulted were removed from the market in 1935 and 1936 by redemption. The number of undefaulted issues left on the market in 1936 was approximately the same as in the early part of the issuing period.

By Type of Property. In this era of defaults the several classes of issues met with varying difficulties in the different years. The annual default record of the five classes of property is shown on Chart I.

The volume of failures in the apartment group increased steadily until 69% of all bonds were in default at the close of 1931. In each of the succeeding years the volume of defaults was progressively smaller. But by 1934 all issues on apart-

² For a detailed discussion of these causal factors see Jones, C. M., "Apartment House Bonds: Some Plans

for Reorganizing Defaulted Issues," *Journal of Land & Public Utility Economics* 358-67 (November, 1933).



ment buildings had failed to meet some type of obligation.

The issues secured by apartment hotels were all in default by the close of 1933. The buildings in this group, like the apartment group, experienced their heaviest failures in 1931.

The volume of defaults of hotel issues did not increase alarmingly until 1931, when 30% went into default, to be followed in 1932 by a total of 54% of the issues failing to meet payments.

Office building issues weathered the early years of general default successfully; not an issue failed to meet all its requirements until 1930. The following year showed a marked increase in defaults, but even so not in as heavy proportion as other classes of property experienced in that year. It was in 1932 that the largest percentage of failures occurred in the office group when over 34% of the total issues defaulted. The volume was small in 1933, but increased in 1934 because of the failure of the largest issue in the study, the \$15,000,000 issue on the 208 South La Salle Street Building. At the close of 1935 five issues, with a volume of \$17,000,000, were still in good standing. These accounted for 11.1% of the office building offerings.

The miscellaneous group of properties first met with difficulties in 1929 and

continued to accumulate defaults at the rate of 32.3% in 1931 and 30.7% in 1932. The default on the issue of H. Schoendstadt and Sons, Inc. in 1934, which was the last to be reported in this group to July 1, 1936, left a balance of \$6,050,000, or 7% of the total volume, continuing to meet payments.

This tendency for each class of property to have its own default pattern was the only deduction which could be drawn from this picture of the progressive default. The earnings record of each individual property, combined with its financial plan, determined how it would meet the difficult years; size of issue, location of property, year or house of issue—none of these offered a clue to explain the behavior.

Non-Defaulting Issues

After reviewing this holocaust among real estate bond offerings generally, special interest attaches to those few issues which continued to meet their obligations. As a point of departure for examining this group and also for analyzing reorganization experience under Section 77B of the National Bankruptcy Act, July 1, 1936 was arbitrarily chosen as the dividing line. This permits analysis of the issues still in good standing at that time and also gives opportunity to examine the accomplishments of federal courts in approximately two years of activity in reorganizing real estate corporations under the bankruptcy statute.

By July 1, 1936 approximately 95% of all bond issues were in default. The 5% which had registered no inability to meet payments as they fell due were from three classes of properties: hotel, office building, and miscellaneous. This unique group includes every type of real estate security issued under the corporate form of organization: six issues were first mortgage bonds; four were lease-

hold bonds; two were second mortgages; and one was a debenture issue. These securities were brought out during the course of the entire period of issue and ranged in size from an issue of \$550,000 to one of \$5,000,000.

Two of these issues were offered by Greenebaum Sons Investment Co., the only real estate mortgage house to be represented; the other 11 issues were sponsored by general investment houses or the affiliates of banking institutions.

The character of use of several of these properties seemed to account for their financial solvency. In three instances the fact that the buildings which furnished the security were special trade centers was responsible for maintaining their occupancy at a high level throughout the depression—the Board of Trade Building, the Insurance Exchange, and the Keogh Building, headquarters for the printing trade. The issues of the Board of Trade and Chicago Athletic Association were given further security by the ability of the corporations to assess their members for any additional funds needed to keep the bonds in good standing. The leasehold bonds of the Northwestern University Stadium also had financial backing from a parent organization; Northwestern University maintained payments on these bonds even when earnings from athletic events fell far short of the required charges.

Leases of a very satisfactory nature were in force on three properties serving as security on other defaulted issues. The Wabash-Monroe Building was occupied by an integral part of Carson Pirie Scott and Company's store, with the subbasement leased to Commonwealth Edison Company for an important working unit. The United States Government leased the Chicago Post Office Service Corporation Building for a number of years beyond the maturity

of the bonds, at an annual rental sufficient to meet interest payments and sinking-fund provisions on this issue. The large warehouse known as the Western Building Corporation was leased to May 1, 1944 to the Chicago Mail Order House, a merchandising organization which maintained earning power throughout the entire period of business depression.

To the fact that the Carbide and Carbon Building was occupied to such a large extent by the company for which the building was named may be related the ability to meet the payments on its bond issue, while the factor of strategic location was paramount in the earnings and solvency record of the 71st and South Shore Building.

The Reorganization Process

The other issues, those of the vast majority, which have had to be reorganized in order to continue operations, were studied to understand what has been occurring recently in the field of real estate finance. A total of 272 issues, which had a volume of \$473,041,000 when issued, form this group of those properties forced to reconstruct their financial schemes. By July 1, 1936, 127 issues, with a volume of \$215,831,000, had completed the details of the reorganization program and new or revised securities had been issued to replace those on which default had occurred. A smaller proportion of the hotel and office building issues had been reorganized than in the apartment or apartment hotel groups; more than 1/2 of the plans of these latter groups had been completed by that date. The fact that the office buildings had been the slowest group to default may in part account for delay in working out new plans, but, in addition, this group and the hotel group contained many of the largest

issues with very complex financial structures and many legal complications.

For only 13 issues, or approximately 10% of the total number and of the total volume, did it prove possible to make the necessary adjustments and changes and to complete the reorganization of the respective properties without either resorting to foreclosure or seeking the aid of Section 77B of the National Bankruptcy Act. From an inspection of the various elements involved in these 13 issues it does not appear that any common factor made these "voluntary" reorganizations possible. All types of issuing organizations were able to rehabilitate certain of their issues on a voluntary basis. It might be thought that, with a small issue having a proportionately smaller group of bondholders, unanimous consent to a plan of revision might be less difficult to obtain. But these 13 issues ran the gamut as to size of original issue from a \$550,000 issue to one of \$9,000,000. All types of property, with the exception of hotel property, were represented. Furthermore, the issues were brought out during the six years from 1923 to 1929 and defaults occurred from August 1, 1930 to December 20, 1934.

The foreclosure route was available from the very beginning of the reorganization work, but it was used as the means for bringing about only 63 of the 127 reorganizations completed by July 1, 1936. The procedure established by Section 77B of the National Bankruptcy Act was followed for 51 issues, i.e., approximately 40% of the issues had turned to this method during its two years of existence. The sections of 77B which greatly accelerated the rehabilitation of real estate corporations provided that: (1) consent of only 2/3 of the creditors affected by the proposed plan was required before it could be

put into operation; (2) underwriting houses could be compelled to make public the complete lists of bondholders; (3) all actions of the committee in control were presented to public scrutiny through court hearings and records; (4) legality of the various steps required for an equitable reorganization were determined by court order. The mere availability of the provisions listed dissolved many deadlocks among committees and caused many reorganizations to be pushed to completion under foreclosure methods.

The different classes of property were found to show a preference in the choice of the two procedures. Approximately 70% of the apartment hotel issues were revised under foreclosure methods, while all completed hotel issues received their final decrees under the provisions of 77B. Most issues in the miscellaneous group which used 77B were of small size. The reverse was true in regard to office building issues, where the larger ones sought revision by means of 77B. The size of issue bore little relation to the means selected for carrying through to rehabilitation, when a comparison of all types of property was made under the two procedures; the average size of issues proved to be approximately the same for both groups.

The administering committee followed whichever route of reorganization it believed would attain the desired end most quickly, considering the unique difficulties confronting the particular issue. Foreclosure proceedings had been instituted for almost every issue. If the issue could be successfully reorganized in this manner within a reasonable period it was thus completed, even after establishment of Section 77B. But if it could be foreseen that a shift to the federal court would bring a more efficient and equitable revision of the prop-

erty and its operation, or end a deadlock of conflicting authority, a petition was filed for reorganization under 77B.

At the beginning of the attempts to work out satisfactory plans for rehabilitating defaulted bond issues, the liquidation trust was the means used. In all the early plans the former equity owners were completely removed from any interest in the property, but with additional experience it was found expedient and good business policy in nine cases to allow them a small amount of participation in the trust. Since the issues secured by two classes of property, the apartment and apartment hotel, experienced the first defaults, they were submitted to the first experimentation in reorganization and were almost the only type which followed the liquidation trust pattern.

When the details of several of these liquidation trusts had been successfully worked out, it was decided that the corporate form of organization might be a more satisfactory means of handling the distressed property. At first, as in the case of the trusts, the bondholders were placed in entire control of the property by receiving all common stock issued by the new corporation. However, giving former equity owners, junior creditors, and holders of subordinated claims a small amount of the common stock soon proved to be an advantageous means of removing objections to a plan. In no instance did the former bondholders lower their proportion below 90% of the total number of shares of the common stock to be outstanding. The usual plan of exchange was 10 shares of new stock for each \$1000 bond, though in a few instances the basis was two shares for a \$1,000 bond. These owners of the new corporations did not receive stock certificates as evidence of their proprietorship; instead their inter-

est in the property was represented by voting-trust certificates. The hope was that by the formation of a voting trust and careful selection of trustees the property would be operated more efficiently; acceptance of the plan of reorganization included agreement to the voting trust arrangement, usually to be in operation from 10 to 15 years, to be terminated earlier only by a majority vote of the stockholders, and to be administered by three trustees. This is a new phase in the history of real estate securities and the record of the management of the properties using this method of rehabilitation will form an interesting commentary on the advantages and disadvantages of such an arrangement.

Under the reorganization plans for five issues the bondholders received all the stock in the new corporation, but, in addition, a certain amount of income bonds was issued to them. In this type of financial arrangement the former bondholders achieved the position of creditors and owners of the building corporation.

On the basis of the earnings of some of the properties, it appeared that the income would be sufficient to maintain a fairly consistent, though low, rate of return to the bondholders if the property were not burdened with heavy fixed charges; income bonds were decided upon as a possible solution for these properties. The old bond issues were exchanged on a par-for-par basis for this new variety of bond which had the same security behind it, the same retirement or sinking-fund provisions as the old, but with interest to be paid only from earnings, with no cumulative provision. In nine cases the bondholders were content with the par-for-par exchange to these income bonds, the former owners receiving all the new common stock; in 12 issues it was necessary to make the

exchange offer more attractive by giving in addition some common stock.

Reorganization of eight issues was possible with only slight modification in the old indenture provisions; in four cases this was accomplished without the formation of a new corporation. An extension of the maturity date of two issues was sufficient to enable the properties to maintain their financial responsibilities; the reduction of interest to a 3% level for the next few years with gradual increases thereafter was all that was required for four issues; and a combination of maturity extension and interest reduction completed the revision of two others.

These variations in treatment formed the basis of all reorganization plans, whether completed by voluntary agreement, through foreclosure proceedings, or under the provisions of Section 77B. It was possible to forego the organization of either a new corporation or a liquidation trust in only 13 of the 127 issues—five under the voluntary agreement plans, the other eight under the provisions of 77B.

For three of the issues which were submitted to the process of reorganization, it was deemed advisable to liquidate the property and distribute the proceeds to the bondholders. The funds required to refinance the cooperative apartment building at 1430 Lake Shore Drive could not be obtained because of many legal difficulties. Distribution of funds obtained from sale of the property amounted to \$26.55 for each \$100 bond. Holders of the leasehold bonds on the Finchley Building received \$119.72 for each \$1,000 bond when the circuit court cancelled the ground lease because of

failure of the leasing corporation to pay ground rent and taxes. The payment which the bondholders of the Michigan Lake 6s received amounted to \$852.64 for each \$1,000 bond and was acquired from sale of the property under provisions of 77B.

This first series of reorganizations of defaulted real estate bond issues turned the control of the properties over to the bondholders, except in a few instances. The original financing of the properties had been accomplished with such a small capital investment by the stockholders that it is not surprising that they were granted little consideration and received limited interest in only a few of the new organizations. The value of the real estate which secured the bond issues had declined so sharply during the years 1926-1933 that the amount of the bondholders' investment was considerably in excess of the property value at the depression level. Therefore, the bondholders were entitled to obtain control of the properties in order to salvage as much as possible of their loans. The success of the reorganization plans in reestablishing the investment of the bondholders on a satisfactory basis will be tested in future developments under varying degrees of economic pressure.

The final instalment of this article will present the market behavior of these securities. It will include data on the market action of these securities after the default period, the price performance of defaulted, reorganized, and unreorganized issues and of the different types of property represented. The analysis will include some comparison with eastern issues and some data on yields of this type of security.

Assignment of Relative Values to Defaulted Divisional Liens

By WILLIAM H. MOORE*

ECONOMISTS and investors have long recognized that, in spite of elaborate mortgage indentures, the treatment of mortgage bonds in railroad reorganization proceedings depends ultimately upon the earnings and economic value of the specific collateral. Where the collateral consists of divisions of a railroad system not only is literal enforcement of separate liens impracticable, but determination of the earnings of the segments as a first step in allocating the new securities in reorganization is itself a difficult task, both theoretically and practically.¹ As long as railroad divisional mortgage bonds are outstanding and traded in, investors are under some constraint to pass judgment explicitly or implicitly upon the importance to a system as a whole of the specific property against which a divisional mortgage is a lien. Such an estimate is indispensable to proper appraisal of the risks involved in the purchase of bonds issued under a

particular mortgage, i.e., the probable treatment of the bonds upon default. Both economists and investors have, therefore, considerable interest in the techniques being followed in current reorganization proceedings for determining the earnings of mortgage divisions. Such techniques are tantamount to the methods employed in determining the treatment of the divisional mortgages in reorganization.²

I. Legal or Dismemberment Theory

Assignment of income to mortgage divisions on the basis of dismemberment of lines may be the ideal solution and, conceivably, might even be necessary in a contested legal receivership, but such apportionment is so far from practical possibilities that its mere suggestion would be ridiculous were it not that mortgage indentures apparently contemplate it as the natural, orderly, and equitable solution. In the first place, the

* Economist, Farm Credit Administration, Washington, D.C.

This article is based upon research incident to the preparation of a doctoral dissertation accepted by the University of Chicago.

¹ Consider the following quotation from the Commission's report in *Seaboard Air Lines Railway Receiver's Abandonment*, 202 ICC 543, 548 (1934): "The owned lines are subject to various liens, including three general and ten underlying divisional mortgages, and there are many common points where two or more lines converge. Consequently, in order to secure a proper accounting, it is necessary to divide the system into sixty subdivisions. The applicants, therefore, in accordance with the instructions of the court, have set up a tentative procedure or formula by which direct earnings and expenses attributable to all mortgaged and leased lines are segregated in their accounts."

² Most of the railroad construction and development in the United States took place under corporate and financial forms employing a multiplicity of local companies, which at subsequent periods were gradually

fused into systems. This growth pattern brought into the railroad financial picture a large number of divisional mortgages. A reorganization plan which neglects to simplify the road's financial structure by eliminating these divisional securities in a measure falls short of ideals.

The reasons—real and alleged—for the financial practices that make for corporate complexity vary considerably. In part, the complexities are an inevitable consequence of consolidation and the establishment of through lines. In part they are attributable to legislative and charter restrictions. (Cf. Julius Grodinsky, *Federal Regulation of Railroad Security Issues* (Philadelphia: University of Pennsylvania, 1925), p. 22 ff.) Another important force making for a multiplicity of companies in railroad systems is the well-known effort to avoid (and to evade) the restrictions of after-acquired clauses and closed mortgages by acquiring or leasing of property already subject to mortgage. (See also Kenneth Field, "The Use of Subsidiary Corporations in Segregating Risks," 9 *Journal of Land & Public Utility Economics* 150 (May, 1933).)

vested interest of the public in the continuance of through routes, obviously, would not in most cases permit dismemberment even if buyers for the separate parcels could be found. With further consolidation of railroads being urged as one of the crying transportation needs, any proposal to break up existing systems would run counter to all modern ideology respecting railroad service in the public interest. In the second place, and even more fatal to the scheme is that, granting the possibility of physical or operating dismemberment, the gains would be delusive, if not non-existent, since the conflicting interests would still be subject to the exigencies of negotiation and agreement of new rate divisions—by their respective and separate managements, instead of by the protective committees. While the principles which govern division of revenue among companies participating in present through billings appear to fit the analogous case of intrasystem apportionment, they are of slight help in reorganization since rate divisions are not standardized.

If the problem was simply one of

branch lines, the existence of a body of precedents in abandonment cases and the possibility of actually envisioning the consequences of dismemberment would facilitate matters.³ Rough and ready estimates of out-of-pocket expenses and of the system revenues which would be lost through abandonment are usually sufficient to resolve the abandonment question. More particularly, a branch line frequently is not essential to the integrity of the system and may, consequently, be treated more ruthlessly in reorganization than more indispensable system properties.

If determination of severance value is the only way out of the reorganization necessities, consideration may be given to the through-rate divisions in effect at the time of the original consolidation or lease. Trustees for the New Haven, with the approval of the Interstate Commerce Commission, used this basis as one of the starting points in setting up a formula for segregating earnings of the Old Colony, operated under lease as a part of the New Haven system since 1893.⁴ In most cases application of such

Milwaukee, Sparta and North Western
Railway Company, First. 149

Total. 248

Equitable allocation of revenues from the Chicago-Twin City traffic is further complicated by the fact that, for the entire haul, an alternative company route—indeed the original route, slightly longer but in no sense circuitous—is available, employing mileage with a different distribution among mortgage liens. The construction in 1912 of the Milwaukee, Sparta and North Western line as a water level route for bridging heavy freight and passenger traffic between Chicago-Milwaukee and the Twin Cities, diverted this traffic from the General Mortgage lines over which it had previously moved via Madison, Wisconsin. In 1935 the traffic density in daily averages of 1,000 gross-tons-one-mile-per-mile-of-road was approximately 10 on the direct line and much less than 2 on the line via Madison. What the traffic conditions might have been had the Sparta line not been built and the diversion not taken place is a matter of speculation of interest now chiefly to the General Mortgage holders!

⁴ *New York, New Haven and Hartford Railroad Com-*
(Footnote 4 continued on page 61)

³ Illustrative of an involved set-up of liens on a main-line haul is the very important Chicago-Twin Cities line of the North Western which employs lines subject to three divisional mortgages, two general mortgages (for this purpose also "divisional"), and the lines of a virtually wholly owned but non-operated subsidiary. In the haul from Chicago to Wyeville, Wisconsin, where the traffic is turned over to the Chicago, St. Paul, Minneapolis and Omaha Railway, traffic moves successively over mileage subject to various system mortgages approximately as follows:

	Miles
Chicago and North Western Railway Company, General.	16
Des Plaines Valley Railway Company, First.	17
Chicago and North Western Railway Company, First and Refunding.	8
Milwaukee and State Line Railway Company, First.	50
Chicago and North Western Railway Company, First and Refunding.	2
Chicago and North Western Railway Company, General.	6

a rule necessitates sweeping assumptions as to how traffic would have moved if it had not moved the way it did, i.e., how it would have moved if the routing had involved separate and independent roads instead of system lines and system gateways.

Characteristic of the type of assumptions which must be made if dismemberment is to form the basis for allocation of new securities are those made by the management of the Chicago and North Western in studies of the severance value of its divisional properties. Bridge-line traffic is presumed to be retained and moved via an alternative route. It is assumed that the several mortgage lines would be able to influence a diversion from present interchange groups of certain portions of the traffic originated or terminated and that, wherever possible, traffic now interchanged at junctions with the severed line would be rerouted. Where a bridge line was built to furnish more economical handling, severance value is assumed to be measured by the additional expense which it is estimated would be incurred if the bridge traffic were rerouted.⁵ The artificiality of the income allocations which inevitably result from any attempt to treat mortgage divisions as severable entities is apparent.

Except in very unusual cases severance is clearly out of the range of possibilities and reorganization must proceed on the assumption that values are to be determined for the divisional lines as integral parts of the system. Perhaps the ideal method of apportionment would be something akin to marginal productivity

analysis or the differentiation process whereby the effect on the total revenues of the successive removal of divisions—first one and then another—would permit determination of the contribution of each. But the practical problem does not involve infinitesimals and to compensate the holders of each of the divisional mortgages on the basis of their power completely to deprive the system of use of the division would call for a total compensation far in excess of the system value. Where the mortgaged segments are relatively few, the "differential earnings" of the parts will certainly exceed the earnings of the whole.

II. Traffic Prorate Theories

The reorganizer is thus forced to concede that an accurate finding of the value of any dismembered segment of the property is impractical, and must yield to an arbitrary apportionment among the various divisions. The problem is analogous to the problem in taxation in which property values or income must be apportioned to various states or taxing jurisdictions. Concerning valuations of this type Professor Bonbright has pointed out that "the peculiar difficulty of these cases arises from the very nature of an organic whole, whereby the sum of the values of the parts does not equal the value of the whole."⁶ As in the taxation problem, the divisional mortgage problem suggests some application of the so-called "unit rule" in which a common denominator is agreed upon from among competing alternatives and apportionment then applied on the basis

formula by which such segregation and allocation shall be made . . ." Recommendations under this clause in a second proceeding followed in *Chicago, Indianapolis and Louisville Railway Company Reorganization*, Finance Docket 10294, decided June 3, 1938; 228 ICC 209.

⁵ Finance Docket 10881, *Testimony*, April 19, 1938.

⁶ J. C. Bonbright, "The Problem of Judicial Valuation," 27 *Columbia Law Review* 509 (May, 1927).

(Footnote 4 continued from page 60)

pany Reorganization, Finance Docket 10992, decided April 9, 1938; 224 ICC 723. This was the Commission's first specific decision under the provisions of the Bankruptcy Act, Section 77 (c) (10) which provides that "The judge . . . may refer to the Commission for its recommendations after hearings thereon if the parties shall so request and/or the Commission determine necessary or desirable, as to the method or

of the arbitrarily chosen ratio. Reliance on such an apportionment or "allocation fraction" rests not upon the definitiveness or accuracy of the resultant finding of earnings or value, but is justified rather on the grounds that *a priori* the common denominator employed will give the best results obtainable in pragmatic equity. Needless to say, each of the various interests may, because of selfish reasons, favor and defend alternative methods even though *all* the methods may be challenged as arbitrary and more or less inadequate.⁷

The competing formulas for apportionment roughly separate into two categories: (1) those employing common denominators which are essentially functions of the original contributions to the business, and (2) those employing common denominators which are essentially functions of earnings. In the first category—those based on original contributions—is apportionment on the basis of par values of the securities, or on some valuation of the property, such as original cost, replacement cost, etc. In the second category are various forms of freight-ton and passenger-mile prorates; somewhat less obviously placed in this category but, nevertheless, in essence a function of earnings, is an apportionment based upon market quotations of the securities at some recent, pre-receivership date. A simple mileage prorate, while almost too crude to prove accept-

able at all, scarcely fits into either category since it presumably introduces elements of original cost and also considerations of revenue in so far as rates are functions of the distance freight is carried.

The arguments for employing any cost or contribution basis as the common denominator may be dismissed in a few words. They are the usual backward looking arguments which assume that cost has something to do with present and future significance of the property to the company. Sound economics, on the other hand, inevitably points to some income basis for the "valuation" of the segments. The fact that mortgage contracts seem to make cost appraisals the approved basis for the apportionment may be taken as evidence of their lack of realism in meeting the practical problems consequent upon default.

The degree of refinement to which formulas based upon some function of earnings may be pushed is almost limitless.⁸ For purposes of this discussion several basic types of approach may be distinguished and briefly characterized as relying on: (1) a gross ton mileage—traffic density—prorate; (2) a mileage prorate subject to an arbitrary percentage terminal allowance; and (3) a constructive mileage prorate employing a more or less rationally determined mileage allowance for originating and terminating traffic.

1. The gross-ton-mileage prorate for-

⁷ "Obviously, any formula for the segregation of earnings between, and the ascertainment of the relative net income of, various mortgage divisions offers opportunity for unlimited debate. Many refinements can be requested which may in turn serve as starting points for other inquiries equally protracted." (Counsel for the insurance group committee, as quoted in report proposed by the Commission's examiner, *Denver and Rio Grande Western Railroad Company Reorganization*, Finance Docket 11002.)

⁸ It is worth while for those who feel impatient with the delays involved in reorganization proceedings to consider the necessity for an extended receivership

period to permit study of allocation of traffic revenues among mortgage divisions. The operating methods and exigencies of a solvent road rarely, and then only by chance, respect the artificialities of mortgage divisions; the compilation of statistics by mortgage divisions is consequently dispensed with by all but the most apprehensive of managements. Allocation of earnings is a major clerical task even when applied to historical data, but if any tests are to be run to accumulate added statistical information, sufficient time must elapse to make the test a fair sample, especially in view of the fact that the variation of income between quarters of the year is notoriously wide for some roads.

mula has the support of certain regulatory bodies which approve it for statistical purposes, and of various taxing authorities administering taxes based upon gross earnings within a state or taxing jurisdiction.⁹ It consists in computing the proportion which the mileage carried within the mortgage division (or the state) bears to the total mileage that the shipment is carried—each shipment being handled individually. Where the shipment is intra-mortgage-division, originating and terminating without passing the division termini, the entire revenue is, of course, credited to that division. This method usually assumes that there is a direct relation between gross ton-miles and net revenue ton-miles by distributing expenses in proportion to gross revenue as computed.¹⁰ Viewed in reverse, the method is equivalent to a gross-ton-mileage prorate of expenses, that is, cost of service and an assignment of revenues on that basis.

Probably the most disputable aspect of this formula is that it, in effect, denies that any greater value attaches to railroad property or service which originates traffic (or delivers it) than to other property which carries the traffic an equal number of miles. Even if one were to regard this as a serious defect of the method, the very defect itself has the merit of passing back heavy terminal charges to the entire revenue from the specific traffic. Thus a "bridge line" with a heavy

traffic density is forced to bear a share of the relatively heavy charges of the originating and terminating properties in recognition of the utter dependence of the bridge line on its through-traffic connections. On the other hand, terminal properties are relieved of a portion of the high costs of producing traffic and the characteristically expensive operation and fixed charges involved in terminal areas.¹¹

2. Because of the obvious crudities of the simple gross-ton-mileage prorate, certain refinements of it may be applied. Under the simplest of these an arbitrary allowance—say 10% of the revenue on each shipment—may be allocated as a terminal allowance to the originating line, a further 10% terminal allowance allocated to the delivering line, and the remainder of the revenue then prorated on the basis of actual ton-miles as in the simple gross-ton-mileage prorate. While affording recognition to the greater costs and greater services of originating and delivering divisions, the method is open to the serious criticism that a terminal allowance when computed as a percentage of the total revenue from a shipment will vary with the length of the haul even though the actual terminal service and costs are relatively, if not entirely, independent of the length of the line haul involved. Moreover, the method is open to serious challenge because of the

⁹ For example, The Iowa State Board of Assessment and Review, Rules and Regulations, 1936, *Relating to Personal Net Income Tax and Business Tax on Corporations*, Article 27.

The method has been recognized and approved by the Commission in connection with Indiana Stone Railroad, a mortgage division of the Chicago, Indianapolis and Louisville Railway. (228 ICC 216.)

¹⁰ In general, less difficulty is experienced in direct allocation of at least a substantial portion of the expenses than of revenues. Common practice is to assign expenses directly where possible and to distribute other expenses either in proportion to expenses directly allocated or in proportion to revenues, train-miles, etc.

¹¹ In the case of the Chicago and North Western properties these considerations are especially significant, for example, in respect to the Des Plaines Valley line—a 19-mile "bridge line" just outside of Chicago, and a line of tremendous traffic density. The Des Plaines Valley has no terminal facilities and during a three months' test period in 1935 originated or terminated only 15/100 of 1% of the traffic handled. Similarly, on the Milwaukee and State Line only 3% or 4%, and on the Milwaukee and Sparta less than 10% of the traffic handled is originated or terminated. In spite of this, all three of the lines are essential in the highest degree to the effective operation of the General Mortgage Lines with which their traffic is interchanged. (Finance Docket, 10881, Testimony IX, p. 321.)

arbitrariness with which the amount of the terminal allowance is chosen; why one percentage rather than any other?

3. To meet this challenge management and consulting engineers of several of the reorganizing roads have developed the so-called "constructive-mileage formula" which is apparently on its way to becoming the most favored basis of revenue allocation. On the basis of mechanics of approach this method probably also merits designation as the most "scientific" of the accepted methods of allocation. Where traffic is handled over two or more mortgage lines, the revenue is prorated on the basis of constructive mileage whereby a mortgage line originating a shipment and a mortgage line delivering a shipment are each credited with an additional mileage block added to their actual mileage and a mortgage line receiving or delivering a shipment from or to a connecting road is likewise credited with certain additional mileage added to its actual mileage.

Any arbitrarily chosen mileage block might, of course, be added to the actual mileage of the originating or terminating line before prorating the revenue, but the superiority of the method depends upon the validity of the particular mileage block chosen. Determination of the amount to be added to actual mileage to arrive at the constructive-mileage may, as in the New Haven case, be based upon a special test study of the debtor's road-

haul and terminal costs.¹² To illustrate the method, the tentative procedure employed by the Chicago and North Western in its constructive-mileage formula is of more general theoretical interest. During the existence of the office of Federal Coordinator of Transportation, a study was made by the staff of that office from which it is possible to determine the average cost of originating or terminating a carload shipment in each rate territory.¹³ Selecting from the Coordinator's data, the management of the North Western determined that the average cost of terminal handling of a car in its territory was \$14.87 and that the average cost per loaded car-mile of line-haul expenses was \$.09623. By dividing the average terminal cost by the average line-haul costs, a figure of 154.5 was arrived at as the mileage equivalent of an originating or final terminal handling. Considering the elements of estimate in the figures, a mileage block of 150 was chosen as sufficiently accurate for practical computations. An equivalent figure arrived at in an analogous manner for interchange handling was 52, upon which was based the approximate figure of 50 miles added to the actual mileage of the mortgage division receiving or delivering a shipment from or to a connecting carrier. Apportionment of revenues between mortgage divisions as contemplated by the mileage-block formula thus provides a particular terminal allowance which

¹² "The constructive-mileage allowances are based on a study of the debtor's road-haul and terminal costs. The study developed that the average system road-haul cost per loaded-car mile was 14 cents as compared with the average system terminal cost per loaded car of \$15.32 and an interchange cost per loaded car of \$3.15. These costs converted into mileage relationship produced the constructive-mileage allowance of 109 miles for terminal and 23 miles for interchange, and this same relationship applied to less-than-carload traffic produced the constructive-mileage allowance of 71 miles for terminal and 17 miles for interchange." (*New York, New Haven and Hartford Railroad Company Reorganization*, 224 ICC 727.)

¹³ U.S. Federal Coordinator of Transportation, *Freight Traffic Report*, Vol. III (Washington, 1935), pp. 246-7 for number of terminal cars handled; p. 251 for aggregate terminal costs; p. 262 for aggregate line-haul costs. The figures given are aggregates by rate territories. Actual costs, of course, vary from terminal to terminal and from road to road within each rate area. The management of the North Western stated that "tests" indicated that road's costs to be close to the averages obtained by combining the Coordinator's data for the two freight-rate territories within which the North Western operates—namely, the Central Freight Association territory and the Western Trunk Line territory. (Finance Docket 10881, Exhibit 237.)

can be defended as to method. That much is true, even though the precise figures are subject to a large measure of approximation because of the almost complete absence of cost-of-service data in railway statistics, to say nothing of the theoretical dogmas respecting the propriety of various costing methods.

III. Market Value of Securities as a Basis of Apportionment

Still another "formula" may be mentioned as not entirely without merit—namely, "market value" of the securities. In this connection the language of debtor's original plan proposed in the Chicago and North Western case both explains and defends this type of approach:

"Because of the failure to develop dependable relative values of securities in our studies of income and expenses on the several lines covered by first mortgage liens, it was decided to take the weighted average sales of the several mortgage bonds over a five-year period (1931 to 1935, both inclusive), as determined by the Wisconsin Tax Commission, as a basis for the allocation of new securities. Approximately twenty-five per cent of this Company's lines are located in the State of Wisconsin. For many years the Tax Commission of that State has used the weighted average market value of this Company's stocks and bonds as a factor in determining its system value for assessment purposes. The market value of these securities was the estimate of the investing public in their relative values. The weighted five-year average eliminates abnormal conditions."¹⁴

The equity of the market value basis of apportionment rests partially on the accuracy of the assumption that the weighted average chosen represents a fair market estimate of the relative values. As to the particular average selected in the North Western case, presumably the Tax Commission has made as sincere and careful a determination of values as

is possible. In any event its status aloof from the partisanship and conflict of the reorganization is a very strong argument in favor of accepting its findings. The major question, however, is whether any market value is a defensible basis for distribution of the new securities. Poor's Financial Service has indicated that it thinks not.¹⁵ On the other hand, the arguments against the use of market values are not particularly persuasive when viewed in the light of the alternatives. As to the larger security issues with active, listed markets there would probably be little dispute as to the merit of the market appraisal as a rough approximation of intrinsic earning power—present and prospective. The proportionate share of each group in the aggregate speculative possibilities of the property is an asset to be reckoned with. None of the formulas basing the allocation of revenue upon historical traffic data introduce even the slightest element of prospective earnings into the allocation such as the market value formula may be presumed to do.

The inequities of the market value basis are chiefly in connection with the reliability of the prices which are taken as the "estimate of the investing public" of the values of the smaller issues—unlisted, inactively traded in, and largely held in substantial blocks by institutional holders who characteristically hold securities to maturity and do not as a matter of policy trade marketwise. For such securities (and to a lesser degree for the listed, more active issues) the price at which sales take place is affected by the imperfections of the market, inertia, incomplete knowledge, and pressure from the investing policy of particular large holders. It is hardly a fair statement of the case to say, however, as one writer does in another connection:

¹⁴ Finance Docket 10881, Debtor's Plan, p. 891.

¹⁵ *Poor's Steam Railroads*, 1936, p. 698. (Comment on Chicago and North Western Debtor's Plan.)

"... those who advocate the market valuation of the securities as a standard of fairness assume ... that the demand is inflexible, i.e., that there would be buyers at that price even if all the securities were offered ... The market quotation may represent the opinion of only a small group of buyers.¹⁶

Whatever the market price is, it is nevertheless true that the continued holding of the securities by the owners who do *not* sell is essential to sustain that price. If any significant changes occurred in the earning power or prospects of a divisional property the institutional buyers should be among the first to anticipate it and would undoubtedly conduct themselves in such a way as to influence the market for even a relatively inactive security. Admittedly the market valuation of some securities imperfectly reflects their true worth, but there is probably no better way of determining their true worth than to accept the prices which prevail in a market where such buyers and owners as there are, are professional custodians of the funds of others and whose ability to stay in business—insurance, savings bank or trust company—depends upon the expertness of their statistical and investing staffs in analyzing and forecasting values. Even though the case of bonds, and especially divisional mortgage bonds, may be of a different order than that of stocks, it is nevertheless essentially true of them that "the permanent investor is not concerned with the constant flutter of small fluctuations ... but he is concerned with

major changes and his attitude determines them."¹⁷

Everything considered, the market value basis for allocating the new securities seems to have more merit than the more favored methods of allocation based upon attempts to apportion revenues according to a formula arbitrarily chosen after the default has become a fact and the reorganization proceeding a theater of conflicting interests.¹⁸ The inequities and inadequacies of any method must be weighed in the light of the inequities and inadequacies of the available alternative methods. The market price formula is not only the only method which gives any weight to prospects, but it is a formula which recognizes values as they actually exist.¹⁹ The fact that market forces have placed certain valuations upon the securities (no matter how imperfect those valuations may be from the standpoint of ideal price determination) places the determination of the relative losses of the various classes of securities in the past. The problem of apportionment being one involving not differences in priority, but differences in values, the formula which best preserves the *de facto* values is the most equitable. Formulas other than market price, no matter how scientific, are essentially unreal and academic and the decision to adopt one or the other of them must inevitably be an act which takes values from one group and awards it to another. The losses have been determined (and distributed) by influences antedating the reorganiza-

¹⁶ George F. Nichols, "Rationale of Corporate Reorganization," 8 *Journal of Business of the University of Chicago* 397-8 (October, 1935).

¹⁷ Charles O. Hardy, "Recent Developments in the Theory of Speculation," 27 *American Economic Review*, Supplement, 266-7 (March, 1937).

¹⁸ The market value basis of apportionment received tacit acceptance by the courts in the 1928 reorganization of the St. Paul. In that case the circuit court declined to upset (and *certiorari* was denied by the Supreme Court) a plan which made the same offer to

holders of the first lien on the less valuable Puget Sound extension, and the holders of a junior lien on the more valuable Eastern lines—the evidence showing that, at the date of the receivership, the two issues were selling at substantially the same market price (*Jameson v. Guaranty Trust Co.*, 20 F. (2d) 808; 275 U.S. 569.)

¹⁹ Market prices are, of course, affected by the coupon rates and maturities of the issues as well as by earnings and inherent investment quality. No allocation of earnings can appraise differences of coupon, maturity, etc., as adequately as does the market value basis.

tion and, if the new securities are apportioned on the basis of market values, the holders of divisional mortgage bonds are left as nearly as possible in the relative position they were in before. The market values being given, there is little to be said for any authority²⁰—the debtor's management, the courts, or a public commission—selecting a different method of apportionment, in effect, reappraising and reshifting the values coming into the reorganization and in the process of doing so giving to one group at the expense of other groups that which neither party had by its market conduct contemplated.

Conclusion

The favor currently accorded constructive mileage prorates in pending reorganizations suggests that in the future investors may not be without precedents by which to predetermine the relative values of divisional mortgage properties,

i.e., their probable treatment in reorganization. Though it is useful to know what formulas are followed in allocating new securities to divisional mortgages, the investor does not now have access to the mass of statistical and accounting data which the railroads themselves seldom trouble to assemble in advance of receivership but which is indispensable to the allocation of earnings to divisions under any "constructive" mileage prorate plan. If railroads persist in preserving divisional companies and divisional mortgages—especially if railroad consolidations of the future stop short of generalizing all liens against the new system—it seems imperative that revenue data by mortgage divisions be kept and published. Even if this were not the first essential in proper disclosure to the investor, it could hardly be considered unduly apprehensive to have anticipated in advance the practical economic exigencies consequent upon default, the legal aspects of which are so fulsomely detailed in the mortgage indentures.

²⁰ Compare Section 77(c) (10), *supra* n. 4.

Reflections on the Single Tax: In Light of the California Plan of 1938

By ROBERT B. PETTENGILL*

IN NOVEMBER, 1938 the citizens of California rejected for the seventh time a proposal to revise the tax system of the State in the direction of the single tax.¹ Even including sales tax repeal in the initiative measure did not suffice to overcome the well-financed opposition. Newspapers, billboards, pamphlets, and radio portrayed the single tax monster seeking to destroy the school system, dispossess home owners, raise rents, and generally bankrupt the entire State. Proponents were handicapped as usual by lack of funds and publicity outlets. Perhaps they suffered even more from the competition of a less shop-worn panacea which promised direct and immediate benefits to hundreds of thousands of oldsters.

Higher taxes upon land values have long been favored by many economists, particularly for regions like California with rapidly increasing population. In this centenary of Henry George's birth the proposals of his followers in his ideological birthplace afford a good occasion for comment on certain important problems of applying his principles, with special attention to the incidence of the burden during the transition.

The California plan of 1938 had certain novel features. The personal income tax, inheritance tax, corporation taxes, gasoline tax, and various license taxes and fees were specifically retained as

sources of revenue. Taxes on realty improvements and tangible personality² were to be removed by gradual reductions in their *tax rate* rather than their assessed value.³ In the first fiscal year this tax would have been 9/10 the current rate on land; in the second, 8/10; and so on with reductions of 1/10 per year until in the 10th year and thereafter the rate would have been zero. During this time, however, the tax rate on land values would necessarily be rising and therefore the tax reductions would not have been as rapid nor as uniform as the law made them appear.⁴ The change would have applied to all political subdivisions of the State now using the general property tax.

Background of the 1938 Proposal

In order to understand the concurrent proposal to repeal the retail sales tax it is necessary to review the circumstances attending its introduction. The depression brought a great decline in property income in 1931 and 1932, with a resulting rise in foreclosures and tax delinquencies. Many individuals lost their property and local government budgets became increasingly unbalanced. To alleviate this situation an amendment to the State Constitution was proposed and adopted in 1933. Under its provisions the burden of property taxation was to

* University of Southern California.

¹ On the tax history of California see reports of various state tax commissions in 1906, 1912, 1917, 1929, 1931, and 1933; Earl C. Campbell, "Separation of Sources of State and Local Tax Revenues in California," 26 *American Economic Review* 41-52 (March, 1936); and the rather popular, H. Dewey Anderson, *Our California State Taxes* (Stanford: Stanford University Press, 1937).

² Since it is treated like improvements and is of minor importance, tangible personality will not hereafter be mentioned separately.

³ The first \$1,000 assessed value of improvements on homesteads is exempted from the outset.

⁴ Taxes repealed in the first year would have added 1/4 to the property tax load. Therefore, the tax rate on improvements would have gone up for a year or two before the 1/10 annual reductions brought it below original levels.

be lightened in two ways: (1) by shifting county school costs to the state general fund beginning with the fiscal year 1933-4; and (2) by transferring the operative property of public utilities from their existing use as state revenue sources through a gross income tax to the assessment rolls of local subdivisions in fiscal 1935-6 and thereafter.⁵ Each of these changes was expected to reduce local tax rates 10 to 15%, or about 25% in toto. Actual reductions were less than this because additional expenditures were budgeted.

When the Legislature met in 1933 to consider the State's financial problems caused by the assumption of school costs and the decline in state revenues, it was faced with the task of raising \$40,000,000 new revenue each year. Under the new amendment a general property tax for school costs was illegal and to use it for other purposes would merely have put the tax burden back on the shoulders of those who had tried to shake it off. Hence the legislators adopted a 2½% retail sales tax, together with a small income tax subsequently vetoed by the governor.

At the end of the next two years the transfer of public utility operative property to the counties for taxation again raised the question of additional state revenue. The new administration proposed to raise the sales tax rate to 3% but was strenuously opposed by the EPIC (End Poverty in California) bloc of legislators who demanded a reduction of 2%. A compromise was finally effected at the higher rate, but foodstuffs were exempted. A small income tax with rates about ¼ those of the federal tax was also

introduced, and higher rates were imposed on bank and corporation incomes (called a franchise tax), insurance premiums, and inheritances.

Effect of the Sales Tax

The status of property owners did improve after 1933, but it is difficult to separate the various factors involved. Probably the improvement in business conditions did more for them and for local budgets than the temporary decrease in property tax rates. By 1937 local tax collectors were demanding as much money from property owners as they had in fiscal 1933, the year before \$35,000,000 annual school costs were shifted from the counties to the State.

Certain individuals have clearly gained from the change. Those whose income is derived solely from property gained more from lower property taxes than they lost through added sales taxes. The 70 million dollars derived from the latter source in 1936 amounted to about 1% of the total assessed value of property in the State. Thus an individual receiving a net income of approximately 10% per year on the value of his property would lose about 1/10 of this income if the sales tax were changed into a general property tax. At the present this individual pays 3% on his retail purchases of things other than food. If these amount to ⅓ of his annual income, 3% on ⅓ of 10% would mean an annual sales tax payment equal to 1/10 of 1% of the value of his property.⁶ In other words, the property owner in this illustration is 10 times better off under the

⁵ This meant virtual abandonment of the principle of separation of sources of state and local tax revenues in effect since 1910. (Cf. Campbell, *op. cit.*)

⁶ Cf. Leven, et al., *America's Capacity to Consume* (Washington: Brookings Institution, 1934), p. 257. In this computation the amount spent for attire and

"other living" amounts to from 29% of total expenditures in the lower income groups to 38% at higher levels. (Food, home, and savings are the other three items.) Allowance should also be made in this State for restaurant meals, now taxed. This would help to offset the untaxed expenditures probably included in "other living."

sales tax than he would be under an equivalent general property tax.

At the other extreme is a large group of people who own no real estate at all. They lose by the sales tax, for their rents are not appreciably lower because of the saving made by property owners. Nor would a return to the old property tax in place of the sales tax raise rents very much, although a long-run shift of that portion of the tax which fell upon improvements would ultimately occur.

Between these two extremes is another large group whose only real property is their homes. They depend upon wages or salaries for most of their income. Assuming again that the average individual spends about $\frac{1}{3}$ of his income upon taxable retail purchases, the home owner neither gains nor loses if his annual income is equal to the assessed value of his taxable property. That is, 1% on his property is equal to 3% on $\frac{1}{3}$ of his income. If he has an annual income greater than the assessed value of his property, he loses by the sales tax, and vice versa. Or if he spends more than $\frac{1}{3}$ of his annual income for taxable commodities, he loses, and so on.

We have no figures on the number of persons deriving their income chiefly from real property, but the number must be small, even if stockholders of corporations are included. The number in the other two groups may be roughly estimated from census data as being about 60% tenants and 40% home owners.

The Tax Rate under the Proposed Law

Since the sales tax repeal under the proposed measure would have burdened

⁷ State taxes which would be retained brought in \$135,000,000 in 1937. Chief among them were the 3-cent gasoline sales tax, \$44,000,000; personal income, \$17,000,000; bank and corporation income, \$17,000,000; liquor, \$16,000,000; and motor vehicle licenses, \$12,000,000. If all taxes are considered, the burden upon the people of the State was about half a billion dollars, or \$80 per capita.

landowners only, some estimate must now be made of the probable future tax rate on land in 1949. The existing ad valorem property taxes of various local units (the State has no such tax) raised about \$260,000,000 in fiscal 1937. Taxes to be repealed brought another \$100,000,000 (retail sales, \$85,000,000; motor vehicles as property, \$12,000,000; railroad cars, \$400,000), making a total of \$360,000,000 to be raised by land-value taxes.⁷ Given the 1937 land value of \$3,300,000,000, to raise this revenue would require an average tax rate of about 11% if there were no delinquencies.

A state-wide change of this type would have had uneven effects upon different regions and different classes of property, a point which single-tax proponents should not overlook. Future county tax rates would have depended largely upon the ratios of exempted property value to land value.⁸ A rough calculation (city costs excluded) indicates probable tax rates varying from 5 to 14% with the most populous county, Los Angeles (it has $\frac{1}{3}$ the State's land value), at about 11%. The owners of unimproved and relatively unproductive land would obviously have been under the greatest pressure where the tax rates were highest, i.e., chiefly in urban counties already highly improved and where city taxes would add to the load. Delinquencies would vary according to this pressure and the opportunity for relief through increasing the productivity of the land.⁹

Opponents of the measure estimated probable delinquencies at from 25 to 50%. These figures seem too high when

⁸ For simplicity, state and county levies are here combined into a single county figure.

⁹ Tripled land taxes, even where the total rate would be low, as in the northern forested counties, would accelerate exploitative lumbering and mining operations, a disadvantage which single taxers should take into consideration.

one considers the relatively low assessed value of the undeveloped land which might go delinquent and the alternative possibility of making land productive by improving it. There is also the probability that, if delinquencies were seen to be mounting dangerously toward the end of the 10-year transition period, the income and inheritance taxes permitted by the proposed amendment would have been called upon to bear a larger share of the load. Ten percent delinquency seems a more reasonable estimate. This would raise the necessary average tax rate on the remaining property to 12%, or approximately three times the present average of about 4%.

Consider next the position of land now being utilized in such a way as to make it yield its full economic rent. What tax rate would be required to appropriate all that economic rent and reduce the value of the land to zero? The answer is a function of the present tax rate, the ratio between assessed and market value, and the capitalization rate for the particular land in question. By State law the assessed value is supposed to equal half the market value. Assume also a present average tax rate of 4%. Then a confiscatory tax would be imposed when the rate exceeded 4% by twice the capitalization rate. That is, to take all the economic rent the tax must take both the net income previously appropriated and the net income remaining which gave the land its value. At a capitalization rate of 5%, a tax rate of 14% or more would be confiscatory; at 6% the tax rate would have to equal or exceed 16%.

For the State as a whole the present economic rent of land available for taxation may be estimated at about \$455,000,000, or 13.5% of present assessed

value. This includes existing land taxes of \$125,000,000 plus \$330,000,000 which is 5% of today's land value estimated conservatively at twice the assessed value in 1937. If the 1949 tax burden upon land were only \$360,000,000 as calculated above, there would have been a safety margin of nearly \$100,000,000 in economic rent remaining in private hands.¹⁰ But the burden of taxation in some cities and on some pieces of income-yielding land would undoubtedly have exceeded the economic rent, unless relief had been granted through reassessment or the State made greater use of alternative taxes. Taxes in excess of economic rent could be paid only by using part of the income from improvements, thus indirectly reimposing upon the latter some of the taxation the amendment intended to remove. From an administrative point of view there is much to be said for using supplementary income to keep the land-value tax from exceeding 90% of the economic rent. Land would then retain some market value, remain largely in private hands, and assessment would be facilitated.

Before proceeding further we should digress for a moment to point out that every increase in the tax rate on land decreases the net income and the market value. The assessed value should then be correspondingly reduced, but this would necessitate a further increase in the tax rate. This is one of the most difficult administrative problems involved in the proposed change. The greater the proportion of the net economic rent which the taxing body wanted to take, the lower would go the value of the land and the higher would be the rate which would have to be imposed to yield the expected revenue if assessments were revised downward. As the net revenue

¹⁰ Government expenses will, of course, increase, but so will economic rent. Since conditions 10 years hence

are quite problematical, it has seemed wise to refer all calculations to 1937 as a type year.

remaining to the landowner approached zero, the theoretical tax rate required would therefore have to approach infinity. This mathematical difficulty might be avoided by abandoning the usual method of assessing land at some ratio of its market value. Instead, land could be appraised by capitalizing the total economic rent, instead of the remainder accruing to the owner after taxes are deducted. A better method would be to tax directly a certain portion of the economic rent, but this would have the disadvantage of being unfamiliar to the general public.

Certain other possible changes in the tax-base should be noted. Some single taxers estimate that, if farm lands were reappraised to eliminate the value of all man-made improvements, their valuation would drop 50%.¹¹ Others suggest the justice of higher valuations on much city land, also mineral and petroleum land, and would assess public utility franchises. They expect an increased demand for land to occur and raise its value after taxes on improvements are removed. Some of these changes would increase the tax-base while others would lower it, but the net change would probably not be large enough in either direction to warrant revising the tax rate previously estimated.

Effect of the Proposal on Different Classes of Improved Property

The status of present owners of various classes of improved land has not been adequately examined in most single-tax literature. In the California tax picture the tripling of the tax on land values would mean injury to all whose improvements were assessed at less than twice the value of their land. That is, if

the taxes on one's improvements were removed, he would benefit only if the taxes on his land were not increased by a larger amount. This raises the important question: "What kind of property has improvements worth less than twice as much as the land value?" Owners in this class would suffer from the change.

Farm Lands. An examination of assessment rolls in Los Angeles County reveals that those with the lowest ratio of improvement value to land value are the farmers. The ratio tends to be lowest on the larger farms and those given to annual crops. It is highest for walnut and citrus orchards and for places more residential than commercial. But in practically no instance does the ratio exceed two to one. Present owners of these properties should therefore be staunch opponents of the proposed change.

Residences. Urban residential property is of many types. The lowest ratios occur in the older portions of the city where the infiltration of apartments and business has raised land values. Dwellings are old and by rule-of-thumb assessments have been depreciated to a small fraction of their original cost. Many home owners in this area would have to pay twice as heavy taxes under the new system.

New homes have ratios of four or five to one and owners would consequently gain. A rough estimate would be that houses built more than 12 years ago have adverse ratios and those of more recent construction have favorable ratios. Even though the growth of population has been rapid in recent years, more home owners, numerically, would be harmed than helped.

The above analysis for Los Angeles County where land values are relatively

¹¹ A provision in the proposed measure specifically included in the improvements which were gradually to be made tax free: "pipes, ditches, wells, tunnels, roads,

clearing and leveling; also vineyards, orchards, alfalfa, growing crops, planted timber and applied fertility or other alterations or additions to nature made by man."

high would have to be modified for the less urbanized parts of the State. Building costs would there be much the same, but land values lower. Hence ratios would generally be more favorable under the single-tax change for home owners in small towns than in large cities.

Another observation should be made regarding the size of homes among those more recently built. In general, the more the builder spends, the higher the improvement ratio, though exceptions are not infrequent. Older structures do not show a similar trend, for the general depreciation of buildings and the uneven appreciation of sites obscure the original relationships.

"Downtown" Real Estate. Single taxers seem to feel that much of the tax burden would be shifted to "downtown" real estate. An examination of the assessment rolls reveals that most stores and office buildings are now more than 10 years old and in nearly every case have an improvement ratio of less than two to one. A representative sample of 75 downtown business properties in Los Angeles showed an average ratio of 0.4 to 1.0. Samples from Pasadena and Long Beach, where land values are lower and structures perhaps newer, showed ratios of 0.65 to 1.00 and 0.8 to 1.0 respectively, still far below the 2.0 to 1.0 dividing line. Taxes on such property would indeed be increased. But where would be the incidence? Owners of stores rented on long leases would have to bear the brunt of the change except where, as is not uncommon, the lessee is under contract to pay the taxes. In that case the additional cost, since it would be uneven in its effect upon merchants, would mean bankruptcy for some firms. The stimulated construction of new stores on vacant lots would increase competition and make matters worse, assuming a less

than proportionate increase in population and volume of business.

Office buildings present similar problems except that here the owner of the land more often pays the taxes. Wealthy landowners would indeed be hurt by the change and would find no way to shift the burden to others. Ratios for industrial property vary considerably, but are usually within the danger zone. An exception of importance is the public utilities whose property has been assessed throughout the State by the State Board of Equalization at figures which show improvements and personal property (vehicles, transmission lines, etc.) totaling \$849,000,000 in 1937 against a land value of \$100,000,000. This ratio in excess of eight to one would make the public utilities, owners of 1/7 of the taxable property of the State, important beneficiaries of the single tax, though somehow it is hard to conceive their championing the measure.

Apartment houses, particularly the newer ones, are also in the particularly favored group with ratios as high as eight and ten to one. Is the single tax, proverbial friend of home owners, going to prove a whip to drive people to live in apartments where one's fractional land cost is reduced to a minimum?

Effect of the Repeal of the Sales Tax

These conclusions regarding the effect of the proposed tax change upon different classes of property owners must, however, be modified to take account of the gains to be derived from the repeal of the sales tax. For instance, assume an owner of a small home whose assessments are \$600 for improvements and \$500 for land, a ratio of 1.2 to 1.0. At 4% his taxes would be \$24 per year on his house and \$20 on the lot, or a total of \$44. If the tax rate on land were to rise in 10 years to 12% and fall to noth-

ing on the improvements, his tax bill, assessments remaining the same, would be \$60, or \$16 more than before. This increase would be offset if the home owner had an annual income of \$1,600 and spent $\frac{1}{3}$ of it (\$533) on articles formerly taxed at 3% under the retail sales tax. With a smaller income or an older house he would have come out in the red. It seems a fair assumption that few home owners among the low income groups (under \$1,500) own new homes. Their improvement ratio is likely to be low and their saving from sales-tax-repeal small. Hence they are likely to be numbered among those most adversely affected unless roundabout gains through greater employment or lower prices should eventually occur.

Tenants, who comprise some 60% of the population, would benefit from the change. The decreased tax on improvements would stimulate building and reduce rents, while the increased tax on land cannot be shifted to the lessee. There would also be an obvious gain to this group through the repeal of the sales tax.

Effect on Future Land Values

One should not forget that the separation of income from land and income from improvements is merely a device for logical analysis and does not often exist in fact. Improved property usually yields a joint income of rent from land and quasi-rent from improvements. To the present owner of improved property it would be immaterial whether his taxes were levied against his land value or against his improvements or against both jointly, if they were the same total amount in each case. For the future owner, however, it would make a difference, since a property tax exclusively on land values would reduce the initial cost of acquiring land, and for a time

after the change in the tax-base the net income from improvement would probably exceed interest on the investment by that portion of the tax saving not yet passed on to the lessee. The ultimate cost of holding land should not be greatly changed, for taxes which equal economic rent should also be equivalent to interest on the former purchase price, i.e., capitalized economic rent.

Many real estate purchases are not based upon careful audits to determine present and probable net incomes. Capitalization rates are not always thoughtfully calculated and certainly they are not uniform throughout an area as large as California with its varying regional rates of population growth. Buyers and sellers alike "play their hunches" in dealing in investment property. They buy that which they think will appreciate most and sell what to them seems likely to depreciate or have an inferior rate of appreciation. But they follow no set formula and present income may be a minor consideration.¹⁹ Speculative buyers who have paid more than 20 times the current economic rent of their land would suffer severely by the proposed change as, of course, single taxers predict. Once the impact of the tax change had worn off, then new owners of old property would have been as well off as new owners of newly improved property.

Conclusion

The above analysis leads one to conclude that however much the 1938 single-tax measure might have brought social justice and economic gain to future generations of Californians, the burden of the transition would certainly not have been distributed according to the canon of ability to pay. More farm-

¹⁹ Cf. H. D. Simpson, "Incidence of Real Estate Taxes," ²² *American Economic Review* 219-30 (June, 1932).

ers and small home owners of today would have suffered, while the wealthy would have escaped, unless they happened to be owners of unimproved or old, improved real estate. The effect on business firms would have been very uneven. Some would have received an undeserved subsidy, such as the public utilities; others would have suffered an unmerited penalty. Gains would not need to have been passed on to customers or employees, but losses which brought bankruptcy might well hurt workers in addition to owners and credi-

tors. Not until a new "generation" of landowners had taken possession of all property on which the taxes had been increased would the adverse effects have been removed. The probable gains from more extensive land-value taxation make it desirable, but legislation to bring it about must be very carefully drafted to minimize economic injustice and prevent political back-fire. Specific provisions for reassessment of certain classes of land should be included and allowances made for regional economic differences.

The Winnipeg Municipal Electric Utility:

II. Financial History and General Conclusions*

By LAWRENCE S. DREIMAN†

THE first article on the Winnipeg Hydro Electric System was concerned chiefly with rates. There it was shown that most consumers of electricity in Winnipeg obtain their current at low cost and that low rates in conjunction with the high cost or non-availability of substitutes have made for a very high average domestic consumption. It was also indicated that low rates have not been secured at the expense of satisfactory service standards. In this concluding discussion the utility's financial history is to be examined to determine the self-supporting character of Hydro's past operations and its prospects for the future.

Introduction

Critics of governmental operation often assert that municipally owned utilities do not include in their budgets all costs of operation. Costs of operation can be shifted from present utility customers in a number of ways. Transfers may be made from general governmental funds, the utility may not make its due contribution to the support of government, unpaid services may be performed by other city employees, or depreciation may be inadequately provided for. The latter, obviously, results in shifting part of the cost of serving present users to future consumers or taxpayers.

Unfortunately, Hydro accounts are not available in a form which permits

the presentation of such a case study as that developed for the Los Angeles Bureau of Power and Light by Glaeser.⁴⁴ Whereas published reports of annual outside audits of the Los Angeles utility are available, only four comprehensive outside audits of Hydro have been made during its entire history. None of these are available in published form and the last is dated 1926.

For recent years, Hydro annual reports which include annual financial statements prepared by the city treasurer and audited by the city auditor offer assistance in this respect. However, early reports are not available, and those for 1927 through 1934 show only consolidated balance sheets and income statements for the electric utility and the affiliated steam-heating system. Annual reports of the city comptroller for 1915-1930 and of the commissioner of finance (city treasurer) since 1930 include annual financial statements of the Hydro Electric System. However, because of rearrangements and adjustments in some of the earlier accounts, for which no published explanations are available, these sources of information leave much to be desired. Such financial data as are presented here are derived primarily from summary statements in recent reports of Hydro and the commissioner of finance and from miscellaneous information gathered from sundry reports and personal inquiries during the summer of 1937.

Hydro has financed its capital expend-

* See 14 *Journal of Land & Public Utility Economics* 388-401 (November, 1938) for the first installment of this article. Footnotes and tables are numbered consecutively with those in the first article.

† Teaching Assistant in Economics, School of Business Administration, University of Minnesota.

⁴⁴ See Glaeser, M. G., "The Los Angeles Bureau of Power and Light: Financial Results of Operation," 8 *Journal of Land & Public Utility Economics* 131-6 (May, 1932).

itures through the sale of bonds and debenture stocks. The by-laws authorizing issuance of these securities provide for the setting up of sinking funds to retire them at maturity. Each year the necessary payments are transferred to a separate municipal organization known as the Sinking Fund Trustees, which organization invests the funds paid over to it and redeems the obligations when they fall due.⁴⁵

Hydro obligations—which are actually City of Winnipeg obligations issued for Hydro purposes, backed by the city's credit and a lien on municipal tax receipts—have been sold for the most part to individual and institutional investors. Two exceptions to this general practice may be noted. The utility has purchased two bond issues with its depreciation reserve funds—one of \$2,000,000 in 1922 and one of \$1,000,000 in 1937. Also, one issue of \$150,000 was sold directly to the Sinking Fund Trustees in 1934. At the present time Hydro holds \$2,800,000⁴⁶ of these bonds in its depreciation fund. The remainder is held by the public or by the Sinking Fund Trustees. In the last few years, because of unfavorable Winnipeg bond market conditions, Hydro has financed part of its capital improvements through a bank overdraft.⁴⁷ Because this overdraft was offset against certain deposits of the utility, the interest cost (i.e., the bank interest which would have been received had there been no offset) has been considerably lower than the cost of obtaining funds through the sale of bonds. Counteracting this gain, however, has been the resulting impairment of the utility's liquidity position.

⁴⁵ Gray, J. H., "Winnipeg Sinking Fund," *Winnipeg Free Press*, December 14, 1937; Sinking Fund Trustees of the City of Winnipeg, *Annual Report*, 1937.

⁴⁶ \$200,000 of the 1932 issue having been retired through the sinking fund in 1937, prior to their matu-

Current Balance Sheet and Income Statement

Hydro's balance sheet and income statement as of December 31, 1937 are presented as Tables VII and VIII. These financial reports do not conform to the accounting classifications usually followed in the United States, and so may appear unfamiliar to the reader. However, the explanatory comments in the discussion to follow should make the utility's financial position clear.

Financial Results of Operation

Wholly comparable income account data can be carried back only through 1932. Table IX gives the chief categories of income during 1932-1937, together with the allocation of gross income among cost of power purchases, taxes, depreciation, other operating expenses, interest and financial expenses, and profit or loss.

Unfortunately, the period covered cannot be considered a wholly typical one. Because the years included were largely depression ones, because a new generating plant at Slave Falls (first put into operation on September 1, 1931) was not being fully utilized, and because power contracted for in 1928 on the expectation of a rising boom demand was being purchased through August, 1937, certain accounts are abnormal, and the financial results are somewhat less satisfactory than usual. The data do show, however, the general sources of income over a period of years and the chief categories of expense.

Depreciation

Hydro's depreciation policy has been

arity. (See *Winnipeg Tribune*, December 18, 1937 and January 22, 1938.)

⁴⁷ The Canadian practice follows the English in calling what, in the United States would be referred to as a line-of-credit bank loan (or simply a bank loan), a "bank overdraft."

**TABLE VII. WINNIPEG HYDRO ELECTRIC SYSTEM BALANCE SHEET AS OF
DECEMBER 31, 1937***

ASSETS			
Capital Assets:			
Property and plant at cost:			
Generation—Pointe du Bois.....		\$ 6,625,091	
Generation—Slave Falls.....		5,283,863	
Generation—Turbine Stand-by Plant.....		836,649	
Transmission—Pointe du Bois.....		1,933,812	
Transmission—Slave Falls.....		1,507,089	
Distribution.....		10,664,145	
General.....		565,888	
			\$27,416,537
Investments:			
Sinking Fund Trustees—sinking fund.....	\$ 9,386,633		
Depreciation fund (City of Winnipeg Bonds).....	2,800,000		
Sundry.....	3,706		\$12,190,339
Bond Discount—unamortized.....			
			279,819
Total Capital Assets.....			
			\$39,886,695
Current Assets:			
Accounts receivable (less reserves):			
Light and power.....		\$ 296,206	
Appliances.....		438,071	
Sundry.....		11,177	
			\$ 745,454
Accrued Earnings:			
Light and power.....	\$ 105,546		
Interest on investments.....	222		\$ 105,768
Materials and supplies.....			
		\$ 159,513	
Sundry.....		46,919	
Total Current Assets.....			
		\$ 1,057,654	
Revenue Deficit†.....		\$ 588,799	
Total.....			
			\$41,533,148
LIABILITIES AND RESERVES			
Capital Liabilities:			
Funded debt.....			\$26,302,000
Bank overdraft‡.....	\$ 1,198,062		
Less funds on deposit:			
Contingent and Insurance Account§.....	\$800,000		
Depreciation Account§.....	197,272		\$ 200,790
		997,272	
Reserves:			
Depreciation:			
Sinking-fund reserve¶.....	\$ 9,386,633		
Depreciation reserve.....	2,997,272		
Debt retireals through sinking fund 	200,000		
		\$12,583,905	
Contingent and Insurance Reserve.....			
		800,000	\$13,383,905
Total Capital Liabilities and Reserves.....			
			39,886,695
Current Liabilities:			
Bank overdraft.....		\$ 1,111,581	
Accounts payable.....		217,684	
Accrued interest on funded debt.....		296,818	
Sundry.....		20,370	
Total Current Liabilities.....			
		\$ 1,646,453	
Total.....			
			\$41,533,148

* Hydro, *Annual Report*, 1937.

† This item, as it stands, represents negative net worth, and is not an asset. The utility's true net worth position—not indicated in its financial reports, and actually considerably better than that reported because of liberal depreciation allowances—will be considered below.

‡ This bank loan is included under capital liabilities because proceeds were used for capital expenditures.

§ These items would probably be better included among the assets.

¶ The reason for including Sinking-Fund Reserve as part of Depreciation Reserves is indicated on p. 80 below.

|| This item actually represents reserve for depreciation which resulted from retirement of debt before its maturity.

THE WINNIPEG MUNICIPAL ELECTRIC UTILITY

79

TABLE VIII. WINNIPEG HYDRO ELECTRIC SYSTEM INCOME ACCOUNT FOR THE YEAR ENDING DECEMBER 31, 1937*

INCOME	
Sale of Current:	
Domestic lighting, heating and cooking.....	\$1,599,639
Commercial lighting and power.....	1,132,136
City of Winnipeg municipal departments:	
Lighting, heating and power.....	\$ 83,247
Street lighting.....	76,998
Water work's pumping.....	45,902
Steam heating system—off-peak.....	92,817
Sundry (including customers' discounts forfeited).....	57,942
	\$3,088,681
Interest on Funds:	
Sinking fund.....	\$ 365,341
Other funds.....	183,323
Miscellaneous Earnings.....	24,570
Total Income.....	\$3,661,915
EXPENDITURES	
Operating Charges:	
Power purchased.....	\$ 105,082
Generation.....	308,778
Transmission.....	43,264
Distribution.....	243,316
Commercial.....	281,312
Administration and general.....	129,297
Taxes.....	86,677
Pension fund.....	24,806
Appliance repairs.....	24,349
Apartment block ranges.....	12,211
Profit on appliance sales.....	2,498†
	\$1,256,594
Less debt charges, taxes, etc., charged in the above (included in item of taxes above or under one of categories below).....	27,503†
Total Operating Charges.....	\$1,229,091
Depreciation:	
Provision for sinking fund‡.....	\$ 488,702
Balance of depreciation requirements.....	338,692
Total Depreciation.....	\$ 827,394
Debt Charges, Financial Costs, etc.:	
Interest.....	\$1,353,203
Amortization of bond discount.....	27,927
Financial expenses.....	8,166
Exchange—net cost.....	3,809
Total Debt Charges, etc.....	\$1,393,105
Total Expenditures.....	\$3,449,590
Net Profit for Year.....	\$ 212,325
SURPLUS ACCOUNT	
Debit Balance, December 31, 1936.....	\$ 801,124
Deduct Net Profit for Year ending December 31, 1937.....	212,325
Debit Balance, December 31, 1937, as per balance sheet.....	\$ 588,799

* Hydro, Annual Report, 1937.

† Deduction.

‡ See p. 80 below.

one of the strongest elements in its financial history. Although changed from time to time, it has always been ultra-conservative.

On September 18, 1913, the Manitoba Public Utilities Commission ordered the utility to set up a depreciation reserve account.⁴⁸ Straight-line depreciation on the basis of the anticipated useful lives of the items in the plant and equipment account was provided for. The composite figure arrived at was approximately 4% of total property investment. Renewals and replacements were to be charged to this depreciation account.

Because the city charter required setting up sinking funds to meet all indebtednesses at maturity, sinking-fund payments were to be met out of the depreciation reserve. In holding that "... the plant will set aside depreciation out of which the sinking fund payments will be taken. It will not be required to provide both . . .," the Commission was following orthodox principles of municipal finance. If a

community not only provides full depreciation for a local utility out of which the plant can be renewed, but also pays off all bonded indebtedness by the time the bonds mature and the plant wears out, it pays all costs of service and in addition leaves a fund sufficient to replace the plant. This involves a double payment for use of the fixed equipment. Users meet this cost adequately if they either pay off the debt during the plant's lifetime or provide full depreciation.⁴⁹ With respect to Hydro's financial history, therefore, we can consider the sinking-fund reserve and the depreciation reserve as serving the same end.

From November 1, 1912 to June 30, 1922 depreciation was provided on the basis of the order described above. In addition, interest earned on the depreciation and sinking-fund investments was added to the reserve funds. Since the rates of depreciation laid down by the Commission were intended to be sufficient without the addition of interest, adding the funds' earnings to the reserves instead of paying them into the

⁴⁸ Manitoba Public Utilities Commission, *Second Annual Report* (for year ending November 30, 1913), p. 95 ff.

⁴⁹ See Buck, A. E., *Municipal Finance* (New York: Macmillan Co., 1926), pp. 530-2.

TABLE IX. COMPARATIVE INCOME ACCOUNT DATA, 1932-1937*

Item	1932	1933	1934	1935	1936	1937
Income:						
Sale of current.....	\$2,881,821	\$2,830,915	\$2,912,165	\$2,957,349	\$3,022,848	\$3,088,681
Interest on funds.....	422,159	453,227	485,214	515,100	524,161	548,664
Miscellaneous.....	20,683	20,730	27,340	24,369	22,944	24,570
Total.....	\$3,324,663	\$3,304,872	\$3,424,719	\$3,496,818	\$3,569,953	\$3,661,915
Expenditures:						
Power purchased.....	\$ 411,416	\$ 455,356	\$ 472,870	\$ 420,329	\$ 262,705	\$ 105,082
Taxes.....	86,695	84,968	86,959	87,580	86,717	86,677
Depreciation (including sinking fund).....	756,395	790,013	815,091	835,164	815,673	827,394
Other operating expenses	1,032,663	955,057	952,201	964,855	977,589	1,037,332
Interest and financial expenses†.....	1,388,148	1,408,959	1,399,508	1,408,312	1,393,449	1,393,105
Profit or Loss.....	350,654‡	389,481‡	301,910‡	219,422‡	33,820	212,325
Total.....	\$3,324,663	\$3,304,872	\$3,424,719	\$3,496,818	\$3,569,953	\$3,661,915

* Commissioner of Finance of the City of Winnipeg, *Annual Reports* 1932-1936; Hydro, *Annual Report*, 1937.

† Includes amortization of bond discount, which item is erroneously classified under category of depreciation in Winnipeg reports.

‡ Loss.

utility's income account resulted in a surplus depreciation provision as of June 30, 1922 of \$647,663.⁵⁰

From June 30, 1922 to December 31, 1925 sinking-fund payments alone were provided as they fell due. Interest on investments continued to be added to the reserve funds, but replacements and renewals were charged as operating expenses. During this period, depreciation was underprovided to the extent of \$121,495. The result of these deviations from the order of the Commission, together with another minor transaction, was to leave a surplus provision for depreciation as of December 31, 1925 of \$504,751.

It will be noted that this surplus depreciation was in excess of the requirements of the Public Utilities Commission, which, as will be suggested later, were, if anything, more than adequate. Of the surplus provision, \$500,000 was appropriated for the purpose of establishing a Contingent and Insurance Reserve Fund. Three hundred thousand dollars additional was appropriated to this reserve fund from operating surplus in 1929.

The irregularities in depreciation accounting described above confused Hydro's financial status. As the result of an audit of Hydro accounts in 1926 by Price, Waterhouse and Company⁵¹ and of a special council committee's consideration of that audit, the city council revised the electric utility's depreciation policy so as to comply with the Commission order of 1913. Beginning January 1, 1926, depreciation at the rate of approximately 4% of plant and equipment was provided. All renewals and replacements were charged against the

depreciation reserve. The interest earnings of the depreciation and sinking funds were from that time on through the present (as of December 31, 1937) paid into the utility's income account, thus giving rise to the rather substantial non-operating income item of "interest on funds" indicated in Tables VIII and IX above. This treatment of depreciation and sinking-fund earnings is a consequence of Hydro's unique financial structure, and needs to be explained.

The city by-laws authorizing issuance of bonds and arranging for annual sinking-fund payments fix the required installments on the basis of given interest earnings on the sinking-fund investments. These nominal rates of interest have been fixed at from 3½% to 4½%, and must be added to the installments to permit redemption of securities at maturity. However, the depreciation rate established was calculated to be sufficient without the earnings of invested funds; to add these earnings to the funds would be to overprovide depreciation. Furthermore, if the Sinking Fund Trustees redeemed outstanding obligations with the installments paid them, Hydro's interest cost would be reduced. Therefore, the sinking-fund installments and nominal interest earnings are both transferred from the depreciation reserve to the sinking fund to permit redemption of securities at maturity, and the sinking-fund earnings, as well as earnings on other investments, are paid into the utility's income account. This "income," then, acts as an offset to interest paid by the Hydro on bonds and stocks which might have been redeemed. The result is that the net interest cost⁵² represents interest on the depreciated value

⁵⁰ See "Report of Hydro Audit Committee to City Council," *Minutes of Winnipeg City Council*, March 7, 1927, pp. 203-5; also, letters from Price, Waterhouse and Company to the Committee, appended as exhibits "A" and "B" thereto (pp. 213-8).

⁵¹ The audit report was not published, but was made available to the writer in manuscript form.

⁵² Which net cost, however, is not shown in the accounts.

of the plant, whereas depreciation is figured as a percentage of original cost.

Depreciation treatment was changed again in 1932.⁵³ After study by the Hydro manager and the city treasurer, it was recommended that the rate of depreciation be fixed at approximately 3% of capital expenditure less the investment in the Slave Falls plant; on this new development the rate was set at 2%, rising by $\frac{1}{4}$ of 1% increments to the full 3% rate in 1936. All renewals and replacements were to be charged against operations. The earnings of the depreciation and sinking funds were to be credited to income account as before. These changes were accepted by the city council and approved by the Municipal and Public Utility Board, successor to the earlier Public Utilities Commission. The Board order⁵⁴ embodying the changes has regulated the actions of the utility in regard to depreciation from January 1, 1932 to the present time.

The present rates of depreciation are based on a life-table for plant and equipment which is quite conservative. The power plant sites are leased, and so are not depreciated. Some of the lives assigned to other classes of property are as follows:

Power plant, buildings, turbines, generators, etc.	50 years
Power plant switchgear.	30 years
Tramway, transmission line, substation, and office building land sites. . .	50 years
Transmission line towers and conductors.	50 years
Other transmission line equipment.	10-30 years
Distribution system.	10-30 years
Furniture.	20 years
Garage equipment.	10-20 years
Motor vehicles.	5 years

It should be noted that since January 1, 1932 the only charges made against the depreciation reserve are the sinking-fund payments, replacements being

treated as a regular operating expense. The depreciation reserve for motor vehicles, however, is an exception to this rule. A separate reserve is maintained for automobile equipment, against which replacements are charged. If plant and equipment replacements continue to be charged to operations, then the "depreciation reserve" really ceases to be a reserve for depreciation, and becomes a device for setting aside funds, which, presumably, will be used to retire debt at a later date.

The complex character of the policy described above, in conjunction with the non-comparability of earlier accounts already mentioned, makes impossible a complete tabular presentation of Hydro's depreciation accounting. In Table X are given depreciation data for 1932-1937.

The adequacy or inadequacy of depreciation provision cannot be measured by any single pragmatic test. The rate at which equipment will wear out or become obsolete cannot be definitely predicted. Not even physical appraisals of property can accurately determine the extent of accrued depreciation during a given fiscal period. Furthermore, adequate maintenance may defer or lessen the reduction in value resulting from depreciation.

The best single yardstick of adequacy is that used by investment analysts—comparison with average allowances of other similarly situated plants. This test cannot be too rigidly applied because there are no satisfactory depreciation norms for entire plants, nor even for particular items of equipment. As a general criterion, however, it has some significance.

One student of investment analysis,

Public Utilities on Hydro Depreciation," *Minutes of Winnipeg City Council*, February 16, 1932, pp. 160-8.

⁵⁴ Order No. 549, issued February 29, 1932.

⁵³ See "Report of the Hydro Manager and City Treasurer to the Sub-Committee of the Committee on

TABLE X. HYDRO DEPRECIATION DATA, 1932-1937

Year (1)	Property and Plant Account (2)	Depreciation and Sinking-Fund Allowance (3)	Ratio of (3) to (2)* (4)	Total Depreciation and Sinking-Fund Reserves (5)	Ratio of (5) to (2) (6)
1932	\$26,747,533	\$756,395	2.83%	\$ 8,987,328	33.60%
1933	26,865,100	790,013	2.94	9,760,645	36.33
1934	26,921,331	815,091	3.03	10,555,371	39.21
1935	26,637,368	835,164	3.14	10,984,563	41.24
1936	26,831,962	815,673	3.04	11,780,638	43.91
1937	27,416,537	827,394	3.02	12,583,905	45.90

* Property and Plant Account figures are as of the end of the year so that the ratios in Column 4 are slightly understated in all years but 1935.

H. G. Guthmann, has compiled composite depreciation rates in various fields including public utilities.⁵⁵ He shows that the average (median) annual depreciation rates—ratio of depreciation allowance to total plant and equipment including land—for the gas and electric operating companies of a number of leading private utility systems in the period 1926 through 1933 varied from 1.4% to 1.7%. The combined average for the eight years was 1.6%. When one notes that this figure is derived in large part from depreciation allowances on steam generating equipment which is subject to considerably more rapid deterioration than hydro-electric equipment, Hydro's depreciation allowances do not suffer at all by comparison. It might also be noted again that for the period in which Hydro's depreciation allowances have averaged 3% of plant and equipment, replacements have been charged to operations. When replacements were charged to the depreciation reserve, the depreciation rate was 4%. A study of Wisconsin utilities made by Sickler yielded average depreciation rates on electric plants for the years 1928-1931 inclusive of 2.2%, 2.1%, 2.0%, and 1.9%.⁵⁶ These figures were obtained by tabulating the reports

which all Wisconsin utilities submit to the Wisconsin Public Service Commission, and so apply to utilities having both steam and hydro generating equipment. Guthmann considers these percentages as being more or less typical of the allowances of a number of large, conservatively managed companies.⁵⁷

The ratios quoted bear out the contention that the Winnipeg utility's depreciation allowances have been very liberal. One danger in using the ratio of depreciation to plant and equipment account lies in the heterogeneous character of plant and equipment balance sheet accounts. If these accounts of the utilities included in the studies referred to have been inflated considerably through the writing up of properties, then Hydro's relatively favorable showing is attributable to this factor, and not to its own conservative policy. To overcome the difficulty of heterogeneous property valuations, depreciation is frequently studied in relation to gross revenues. Hydro's depreciation allowances in relation to gross revenues for 1932-1937 inclusive are shown in Table XI.

The ratios of depreciation to gross revenues of the Wisconsin electric companies mentioned above were as follows: 1927-10.0%; 1928-10.5%; 1929-

⁵⁵ Guthmann, H. G., *Analysis of Financial Statements* (New York: Prentice-Hall, 1936), p. 206.

⁵⁶ Sickler, Barclay J., "Expense and Capital Ratios of Wisconsin Electric, Gas, Telephone, and Water

Utilities: 1927-1931," 9 *Journal of Land & Public Utility Economics* 57-62 (February, 1933). Quoted by Guthmann, *op. cit.*, pp. 385-6.

⁵⁷ *Op. cit.*, p. 386.

10.3%; 1930—10.0%; 1931—10.4%.⁵⁸ Upgren has computed this ratio for a number of utilities for the year 1935.⁵⁹ For seven selected predominantly hydro-electric utilities, the ratios vary from 5.5% to 9.9% with an average of 7.3%.

TABLE XI. RATIO OF HYDRO'S DEPRECIATION ALLOWANCES TO GROSS REVENUES, 1932-1937

Year (1)	Gross Revenues (2)	Depreciation and Sinking-Fund Allowance (3)	Ratio of (3) to (2) (4)
1932	\$3,324,663	\$756,395	22.75%
1933	3,304,872	790,013	23.90
1934	3,424,719	815,091	23.80
1935	3,496,818	835,164	23.88
1936	3,569,953	815,673	22.85
1937	3,661,915	827,394	22.59

It appears on this basis as well as on the earlier one that Hydro's depreciation allowances, as such, are more than adequate. Considering such norms or typical cases as have been derived and the reputedly good state of maintenance of Hydro's equipment, it is not too much to say that the utility is setting aside about twice the "depreciation reserves" that the average private utility under similar operating conditions would provide. The fact that as of the end of 1937 the total depreciation and sinking-fund reserves amounted to 45.2% of the property and plant account bears out this generalization.⁶⁰

Self-Supporting Character of Hydro

Hydro, being a department of the City of Winnipeg, is not legally subject to municipal taxes. Since 1931, however, it has contributed funds equal to the taxes it would have paid had it been pri-

vately owned. Prior to 1931 the utility paid property taxes to outside rural municipalities through whose territories its transmission lines ran, local improvement taxes (special assessments), and from 1922 on general property taxes on land and buildings within the city. In 1931 the utility also began paying the property tax on its local distribution system. In addition to these taxes, Hydro pays a small business tax on its appliance department sales rooms. It is, however, subject to neither the Provincial nor the Dominion income taxes. To indicate the proportionate tax burden of the utility, the data in Table XII relating taxes paid to gross revenues for 1932-1937 are presented.

TABLE XII. TAXES PAID BY WINNIPEG MUNICIPAL ELECTRIC UTILITY, 1932-1937

Year (1)	Gross Revenues (2)	Taxes (3)	Ratio of (3) to (2) (4)
1932	\$ 3,324,663	\$ 86,695	2.61%
1933	3,304,872	84,968	2.57
1934	3,424,719	86,959	2.54
1935	3,496,818	87,580	2.50
1936	3,569,953	86,717	2.43
1937	3,661,915	86,677	2.37
Totals	\$20,782,940	\$519,596	2.50*

* Combined ratio.

Prior to 1931 the utility had made a number of contributions to the city. In 1924, \$50,000 was contributed; in 1927, \$100,000; and again in 1929, \$100,000. In 1931, when it was decided to put Hydro on the same tax basis as its private competitor, an additional \$150,000 was contributed. The total of \$400,000 was considered the equivalent of the difference between taxes which a private company would have paid and those actually paid by Hydro through 1930. The effect

⁵⁸ Sickler, *op. cit.*, p. 59; Guthmann, *op. cit.*, p. 386.

⁵⁹ Upgren, Arthur, "Public Utility Bonds as Media for the Investment of Bank Funds," *Financial and Investment Review* (University of Minnesota), September, 1936.

⁶⁰ Compare figures for a number of companies relating "... the extent and amount of their depreciation ... to their electric plant accounts," *Edison Electric Institute Bulletin*, December, 1938, p. 550.

of including these contributions together with taxes paid (but excluding any consideration of the distribution in time of the contributions as compared with annual tax payments) is to give an average annual tax-cost figure for the utility's entire operating history of approximately 2.5% of gross revenues.⁶¹

Compared with taxes paid by private electric utilities in the United States (Table XIII), Hydro's bill is very small.

TABLE XIII. TAXES PAID BY PRIVATE ELECTRIC UTILITIES IN THE UNITED STATES*

Year	Percent of Operating Revenues
1922	8.28%
1927	9.46
1932	11.90
1933	12.90
1934	14.10
1935	14.10
1936	14.60
1937	14.70

* *Electrical World*, January 15, 1938, p. 95.

This is not to suggest that Winnipeg taxpayers are being imposed upon by the consumers of electricity. It indicates only that the tax burden on consumers, as such, is less than that on customers of private electric companies in the United States. The writer believes that once a municipality has decided to provide utility services through its own organization, the amount of taxes which the utility shall contribute to the general fund is a question of policy to be determined by the voters or their elected representatives. The requirements of honest reporting are fulfilled if it is reported to what extent, if any, the utility customers are contributing to the support of government. In Winnipeg, consumers do not make large contributions to general city expenses via their electric bills. This

⁶¹ Total taxes paid by the utility through 1934 amounted to \$1,136,000 (Hydro, *Annual Report*, 1934, p. 2). Total revenues during this period amounted to \$45,825,019. The ratio of the former to the latter is .0248.

factor aids in accounting for the low levels of rates in Winnipeg. It should be pointed out in a financial history of the utility, but should not be criticized by an outsider.

In addition to paying taxes and tax equivalents, Hydro has been self-supporting in all other respects. There have been no surreptitious transfers of funds from other city departments to the utility or vice versa. All city departments make adequate payments for utility services rendered them.⁶² Also, although its bonds are a charge on the city at large, Hydro has always taken care of sinking-fund payments when due. Winnipeg's (former) good credit record enabled it to float these securities at low interest rates without raising the cost of its other borrowings.⁶³ These bonds are not tax-exempt, so the relatively low interest cost has not been at the expense of other governmental units.

Hydro has its own office building, and pays all expenses in operating it. In addition it pays for overhead administrative services provided for it by city officials and departments. These payments for the years 1935 and 1936 are as follows:

Item*	1935	1936
1. Salaries—civic executives	\$ 7,905	\$ 8,005
2. Salaries and expenses—finance department	11,873	10,220
3. Fees and expenses—audit department	9,736	9,745
Totals	\$29,514	\$27,970

* City of Winnipeg Finance Department, "Hydro-Electric System Comparative Finance Statements," *Report No. 275*, December 31, 1936 (typewritten).

These charges appear to be adequate payments for services rendered. Some opponents of the municipal system say that private companies cannot begin to

⁶² See first article, *op. cit.*, p. 396.

⁶³ This opinion was expressed to the writer by W. B. Brown, deputy city treasurer, in a personal interview of which there is no written record.

get legal, financial, and other services at the same cost as Hydro does. To this argument the obvious reply is that use of regular city departments' and officers' services constitutes one of the important factors in favor of municipal operation of local utilities. All that should be required is that the municipal utility show the cost of services rendered and if it is to be self-supporting, that it pay that cost, not that it pay what would be the cost to a private utility.

General Financial Situation

Hydro's growth has been satisfactory, and there are elements of soundness in its position which are not explicitly indicated in the current financial statements. Data suggesting the utility's financial development and describing its surplus record, as summarized in the 1936 and 1937 annual reports, are presented in Table XIV. The first more or less hidden pillar of strength in the Hydro financial house is its Property and Plant Account. Here there has been no inflation, all assets being included at cost. Financial costs have been kept at a minimum so that almost the entire face value of the utility's capital debt has gone into actual plant and equipment. Also, substantial amounts of interest during construction which, following orthodox principles of utility finance, might well have been capitalized have been charged either against surplus or as operating expenses. To the extent that interest was charged as an operating expense, contemporary users of current were paying part of the cost of capital improvements which were to be used to serve future consumers. Thus the equity of the city, although not recognized as such, was increased.

⁶⁴ *Supra*, p. 84.

⁶⁵ Specifically, this would include the item of interest paid during construction mentioned in the last paragraph, and such part of the Contingent and Insurance

The second and greater pillar of strength—this time not hidden, but rather camouflaged—is to be found in the combined depreciation and sinking-fund reserves. The current balance sheet shows a net deficit of \$588,799. However, this does not imply that the electric utility as a whole is a financial liability. The redundant depreciation which has been provided really represents cumulated net income, which in turn becomes the city's equity in the system. The excess of sinking-fund and depreciation reserves over accrued depreciation cannot be determined in any simple and direct manner. If, however, we follow the suggestion made above,⁶⁴ we conclude that $\frac{1}{2}$ of these reserves or \$6,291,952 amounts to operating surplus. Because of the approximate character of this presumptive surplus, we disregard such other small hidden equities as may exist⁶⁵ and, deducting the balance sheet deficit from the surplus, arrive at a figure of \$5,703,153 which represents the city's equity in the utility.

This statement assumes that the sinking fund is in a solvent position. Fortunately this is the case. Although part of its resources are invested in Western Provincial and local securities which are currently selling far below par, the gains on the Dominion and Eastern bonds which are now commanding substantial premiums have about offset the losses. The result is that sinking-fund investments considered as a group are carried at about current market prices, and so are sufficient to meet bond maturities as they arise.⁶⁶

The large depreciation allowances which have built up the presumptive cumulative net income of the utility do

Reserve as is surplus rather than liability reserve. (See Guthmann, *op. cit.*, pp. 37-41.)

⁶⁶ See Appendix I of thesis, *op. cit.* (first article), for comment on present market values of sinking-fund investments.

THE WINNIPEG MUNICIPAL ELECTRIC UTILITY

87

not indicate that present customers are overpaying for their current. Although the utility was established and is operated primarily to provide electricity at low cost rather than to produce large operating surpluses, the accumulation of a substantial surplus to act as a buffer against the effects of lean years, misfortune, prolonged low-water conditions, an unlooked for growth of the city which would require abandonment of much of the present distribution system, an (unlikely) rate war, etc. is most desirable.

In the absence of a stockholders' equity to serve this buffer function, unless the operating surplus had been accumulated, the utility might have turned out to be a financial liability to the city in the future. Although it is quite correct in principle to have contemporary ratepayers pay only for the proportionate amount of the capital equipment they use and leave for future consumers the task of replacing such value as remains after the current period, in practice this becomes very dangerous. Hydro's proced-

TABLE XIV. HYDRO ELECTRIC SYSTEM, STATISTICS, 1913-1937*

For Year Ending	Total Assets†	Property and Plant	Total Reserves including Surplus	Revenue	Expense	Surplus
April 30						
1913	\$ 6,481,391	\$ 5,637,809	\$ 125,603	\$ 545,644	\$ 687,784	\$ 142,140‡
1914	7,847,501	6,724,373	360,901	867,621	807,399	60,223
1915	8,191,373	7,327,306	640,214	976,348	897,156	79,192
1916	8,630,711	7,443,772	1,008,605	995,511	913,096	82,416
1917	9,069,266	7,549,492	1,440,531	1,020,480	931,993	88,487
1918	9,539,320	7,686,280	1,665,618	1,056,282	999,461	56,821
1919	10,271,165	8,035,736	2,100,867	1,097,197	1,042,934	54,263
Dec. 31, 1920 (20 months)	14,804,888	8,942,430	2,995,052	2,258,537	2,093,615	164,922
1921	15,397,572	11,675,718	3,458,307	1,572,150	1,607,881	35,731‡
1922	16,657,895	12,521,948	3,743,896	1,659,726	1,682,942	23,216‡
1923	17,681,828	13,086,183	4,217,621	1,741,964	1,615,129	126,835
1924	19,866,014	14,109,888	4,619,234	1,863,175	1,753,090	110,085
1925	21,411,922	15,409,845	4,983,868	2,037,711	2,012,986	24,725
1926	23,301,030	16,125,915	5,945,108	2,456,978	2,325,893	131,086
1927	25,136,307	16,943,285	6,700,665	2,701,046	2,438,377	262,670
1928	27,046,899	17,908,138	7,512,361	2,939,417	2,654,299	285,118
1929	29,515,967	19,431,532	8,343,855	3,231,167	2,952,120	279,047
1930	34,594,039	23,630,313	9,234,218	3,415,274	3,323,968	91,306
1931	35,585,949	26,427,320	9,546,736	3,334,536	3,196,233	138,302‡
1932	36,537,940	26,747,533	9,863,197	3,324,663	3,196,233	138,302‡
1933	37,185,175	26,865,100	10,247,032	3,304,872	3,094,353	309,419‡
1934	38,088,600	26,921,331	10,739,848	3,424,719	3,726,630	301,910‡
1935	38,194,537	26,637,368	10,949,619	3,496,818	3,716,240	219,422‡
1936	39,121,479	26,831,961	11,779,514	3,569,953	3,536,133	33,820
1937	40,944,348	27,416,537	12,795,106	3,661,915	3,449,590	212,325
Total				\$56,553,705	\$55,734,616	\$ 819,089
Add excess depreciation provided to December 31, 1925.....						504,751
						\$1,323,840
Deduct appropriations as follows:						
Contingent and Insurance Reserve.....				\$800,000		
Adjustment for fixed assessment (taxes).....				400,000		
Interest during construction Slave Falls.....				242,857		
Bond discount.....				211,127		
Sundry.....				258,655		
						\$1,912,639
						\$ 588,799‡

* Hydro, Annual Reports, 1936, 1937.
 † Does not include revenue deficits.
 ‡ Deficit.

ure in this respect is to be commended.

Just as the utility shows a net deficit in its published balance sheet, though the city has a presumptive equity in the system of almost \$6,000,000, so it reports only very small profits during most years of its existence, and deficits for some including the period 1932-1935 inclusive (Tables IX and XIV). These small profit and deficit figures, however, emerged after provision of the more than liberal depreciation allowances previously considered. It has already been suggested that about $\frac{1}{2}$ the annual depreciation allowances really amount to a net income return to the city, although the proceeds are earmarked for the depreciation and sinking funds. To give some idea of the magnitude of the presumptive earnings of the utility, if the "excess" depreciation is considered as income, and of the relationship of these earnings to the presumptive equity of the city, the data in Table XV are presented for as far back as the available records will permit. Two other financial ratios of some significance are also included there.

The presumptive city equity consists of $\frac{1}{2}$ the combined depreciation and sinking-fund reserves with the operating surpluses shown on the balance sheets of December 31, 1931 and 1932 added to $\frac{1}{2}$ the reserves as of those dates, and the

operating deficits shown on the subsequent balance sheets deducted from $\frac{1}{2}$ the appropriate year's reserves. The resulting figures were adjusted to represent the average equity during the year rather than at the end of the year by taking a simple arithmetical mean of the figures for the beginning and end of each year.

The presumptive net income consists of $\frac{1}{2}$ the annual depreciation allowances, with the losses shown for 1932-1935 deducted from the figures so derived and the profits shown for 1936 and 1937 added.

Again, the shortness and non-typical character of the period covered make conclusions from the presented data difficult. One can say that the real earning record of the utility has been considerably better than that indicated. In the bottom depression years the rates of earnings on the presumptive equity were negligible, but in the last two years they have been substantial. The presumptive earnings on the city's equity are, of course, actually being used primarily to build Hydro's large reserves. These reserves, disregarding the Contingent and Insurance Reserve, will permit paying off the capital debt in about 20 years at the present rate of accumulation. Barring radical changes in the use of electricity and the arts of producing

TABLE XV. FINANCIAL RATIOS, 1932-1937

Year	Average Presumptive City Equity	Presumptive Net Income	Presumptive Rate of Return on Equity	Adjusted Operating Ratio	Capital Turnover Ratio	Reciprocal of (6)	Adjusted Capital Turnover Ratio	Reciprocal of (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1932	\$ 4,605,906	\$ 27,544	.60%	66.24%	9.23	10.84%	7.73	12.93%
1933	4,568,121	5,525	.12	66.78	9.47	10.56	7.81	12.80
1934	4,614,436	105,636	2.29	65.92	9.24	10.83	7.45	13.42
1935	4,659,750	198,161	4.25	63.92	9.06	11.04	7.20	13.89
1936	4,873,266	441,656	9.06	57.39	8.84	11.31	6.96	14.37
1937	5,396,174	626,023	11.60	53.19	8.78	11.39	6.81	14.69
Totals	\$28,717,653	\$1,404,545	4.89%*					

* Combined ratio.

it, this will probably be long before the plant has worn out. The city's policy, therefore, tends toward the establishment of a debt-free plant which will still have considerable service capacity.

The operating ratio or ratio of operating expenses to operating revenues indicates the proportion of operating revenues consumed as operating costs. This ratio is oftentimes used as a measure of the efficiency of electric utilities; the lower the ratio, the larger the percentage of operating revenues available for interest and dividend payments, and so the more efficient the utility. Actually, use of this ratio as a measure of efficiency is limited because the price policy of a utility affects it considerably. For example, an electric utility with a conservative investment in plant and equipment and low rates would have a high operating ratio, but would be quite efficient as far as its consumers are concerned. The ratio is not as meaningful as its precise appearance in Table XV might suggest, but it is included for comparative purposes.

The adjusted operating ratios were computed by dividing the operating expenses reported, which include taxes, plus $\frac{1}{2}$ the annual depreciation allowances by the operating revenues reported for each of the years in question. In the case of Hydro, the lower the operating ratios as given above, the larger the percentage of operating revenue available for payment of interest, creation of recognized surplus, and the building up of depreciation and sinking-fund reserves.

The ratios ranging from 64.24% to 53.19% in the six-year period covered compare with a modal average of 60.8% for 134 predominantly hydro-electric utilities in the years 1920, 1923, 1925 and 1926.⁶⁷ Sixty percent of these com-

panies had operating ratios ranging between 69.9% and 50%. The Hydro's financial condition, however, is even better than would be suggested by this comparison. It has, as a result of its unusual financial structure, in addition to the operating revenues left after operating expenses are met, the considerable non-operating revenues (Table IX) already explained to aid in paying or, more correctly, offsetting its debt charges. The lowering of the adjusted operating ratios results primarily from the increase in operating revenues during the period covered and from reduced purchases of power in 1936 and 1937.

The capital turnover ratio or ratio of average book value of fixed capital to operating revenues measures the number of years it takes to turn the fixed capital completely. The ratio of 8.78 for 1937, for example, means that during 1937 Hydro had 8.78 times as much fixed capital at cost as it had operating revenues. The reciprocal of this ratio in Column 7 (Table XV) means that annual operating income equalled 11.39% of the cost of total fixed capital. The capital ratios were all adjusted to represent average conditions during the years covered, rather than end-of-year conditions, by averaging capital at the beginning and end of each year.

No satisfactory typical capital turnover ratios for hydro-electric utilities are known to the writer. Sickler computed this ratio for all Wisconsin electric utilities for 1928-1931 and arrived at these figures: 1928-4.9; 1929-4.8; 1930-5.1; 1931-5.4.⁶⁸ Capital ratios are generally high for hydro plants—going with low operating ratios—and so the Wisconsin figures which are composites derived for both hydro and steam systems

Illinois, Bureau of Business Research, *Bulletin* 42 (1932), pp. 13, 14.

⁶⁸ *Op. cit.*, p. 61.

⁶⁷ Smith, Raymond F., "Operating and Earning Power Ratios of Electric Companies" (University of

do not offer an adequate basis for comparison. Guthmann's study of the electric and gas operating units of a number of holding companies shows ratios of 3.50 to 10.27 in the years 1929 and 1930, with the median ratios for these years 5.59 and 6.18 respectively.⁶⁹ The ratio for the Southern California Edison Company which has more than $\frac{1}{2}$ its capacity in hydro plants was 7.9 in 1926.⁷⁰

Hydro's practice of setting up funded reserves⁷¹ involves not deducting accrued depreciation from cost of fixed equipment in its accounts. This tends to overstate the present value of fixed equipment as shown on the balance sheet, unless the reported figures are taken in conjunction with estimated accrued depreciation. Using the reported book value of fixed capital without adjustment, therefore, exaggerates the length of the period required to turn fixed capital. To overcome this difficulty, the adjusted ratios in Column 8 are presented. In computing these ratios, the fixed capital for each year was taken at its presumptive present value after "proper" accrued depreciation had been deducted. Following the former practice used, it was assumed that $\frac{1}{2}$ the accumulated depreciation and sinking-fund reserves represented accrued depreciation. The property and plant account figures were deflated accordingly. The results were adjusted to represent average conditions during the year rather than at the end of the year. This treatment of the property and plant account is justified because the reserves are invested in income-producing securities, the returns on which reduce the expenses which must be met from the income of the fixed plant.

The adjusted capital ratios indicate a more rapid rate of capital turnover than

do the unadjusted ones. The former approach the turnover ratios quoted above for both steam and hydro plants. This is to be expected in the case of a utility which has superior hydro facilities. In either case, however, the high capital ratios imply an inflexibility in adjusting fixed plant to consumers' demands and changes in the arts. For this reason it is fortunate that Hydro has built a substantial presumptive equity to cushion such changes as may occur, even though it is operated to provide electricity "at cost."

The working capital of an electric utility is generally of considerably lesser magnitude than its fixed capital. Because, however, Hydro's current position has been criticized of late, it will be briefly touched upon here. The criticism made is really a three-fold one. First, the utility has invested most of its depreciation fund in non-liquid City of Winnipeg bonds. Second, it has offset its contingent and depreciation bank accounts with a capital loan so that the funds are not available for their avowed purposes. Third, the result of these two actions has been to put the utility in a position where it could not meet its current obligations with its current assets.

To answer the criticisms one must distinguish among what accountants call reserves, funds, and funded reserves.⁷² A reserve is not a sum set up for some special purpose. It is an amount set aside for some purpose, which amount appears on the liability side of the balance sheet, and is balanced by any asset—current or fixed. If a sum in cash or securities has been set up, that is known as a fund. If a reserve is balanced on the asset side by a fund as large as the reserve, the reserve is called a funded one.

⁶⁹ *Op. cit.*, p. 360.

⁷⁰ *Ibid.*, p. 359.

⁷¹ Nature of funded reserves is commented on below.

⁷² See Guthmann, *op. cit.*, pp. 43, 44.

Utilities do not generally fund their contingency and depreciation reserves, preferring to invest them in operating property. The argument for this is that the reserves can be more profitably employed inside the business than outside. When reserves are invested in the business, the directors must expect that, in case funds are needed, the remaining assets will provide cash or serve as collateral for bank loans or sale of securities.

Hydro's sinking-fund arrangement is such that a large part of its depreciation reserves must be funded and deposited with the Sinking Fund Trustees. In the case of the depreciation fund proper, the utility has actually invested its reserves in its own plant. A paper transaction in which bonds were issued for and purchased by Hydro was carried through, but this does not affect the real situation. To the investment of the utility's reserve in its own plant, no valid objection can be made.

The same reasoning applies to the Contingent and Insurance Reserve Bank Account and the Depreciation Bank Account. These reserves were originally funded although they might well have been invested directly in the plant. Later, because of unfavorable bond market conditions, a capital loan was (approximately) offset against these deposits. Basically then, these reserves too are invested in the plant. To this again there can be no objection, except that in the transaction a short-term definite obligation was secured in exchange for longer-term probable ones. There is nothing dishonest about this as some have suggested, but it has impaired the utility's liquidity position.

The effect of this capital overdraft is

⁷² A study of gas and electric utilities in the period 1917-1924 revealed that the modal current ratio for a large number of utilities was .64. See "The Current

to give the utility a very low current ratio or ratio of current assets to current liabilities. This ratio as of December 31, 1937 is shown in Table XVI.

The current ratio of .37 does not indicate a precarious financial position. This ratio in a public utility is not very significant for a utility's current liabilities are relatively small and its income steady and almost assured. Many utilities have current ratios of less than one.⁷³ However, because of the probable difficulty in obtaining credit on short notice to meet contingencies, it would appear advisable to fund the capital overdraft, even though this would result in increasing the net interest cost to some extent.

TABLE XVI. HYDRO'S CURRENT POSITION,
DECEMBER 31, 1937

Current Assets:	
Accounts receivable (less reserves)....	\$ 745,454
Accrued earnings.....	105,768
Materials and supplies.....	159,513
Sundry.....	46,919
Total Current Assets.....	\$1,057,654
Current Liabilities:	
Capital bank overdraft.....	\$1,198,061
Current bank overdraft*.....	1,111,581
Accounts payable.....	217,684
Accrued interest payable.....	296,818
Sundry.....	20,370
Total Current Liabilities.....	\$2,844,514
Working Capital Deficit.....	\$1,786,860
Current Ratio.....	.37

* Used in part to finance appliance department operations.

The financial structure and history of Hydro both appear unnecessarily complicated. In retrospect it seems that a serial bond arrangement with the utility retiring its own debt would have been more satisfactory than the present set-up. Certainly it would have been more simple. However, the utility's affairs are less involved than are those of

Ratio in Public Utility Companies" (University of Illinois, Bureau of Business Research, *Bulletin* 9 (1926), pp. 20, 21.

many private utilities. Also, the present arrangement is in line with the financial practice of Winnipeg and, apparently, of other Canadian cities. No damning criticism of this practice can be made.

Although complicated, the utility's present financial position is quite strong and satisfactory. Hydro has had no difficulty in obtaining necessary funds as have some other municipal utilities. Its levels of rates seem adequate to cover all expenses. Utility funds are kept separate from general municipal funds, and there appear to be no hidden subsidies in the picture.

The future does not appear overly rosy, but should bring at least as much success as has the immediate past. The power-purchase contract entered into before the decline of 1929, and under which much power that could have been generated at Slave Falls was taken, has now expired.⁷⁴ Prosperity has not returned to Winnipeg, but there has been some increase in business activity, and in Hydro's load. To meet a future growth in the load, the Slave Falls plant's capacity can be increased by 48,000 hp. at relatively low cost since the preliminary work and dams needed for this purpose have already been provided. The utility should be able to make somewhat larger contributions to the city in the future than it has in the past. Political raids on its surplus, however, would impair its financial position and might well lead to considerable difficulties at some future date.

Conclusions

In Winnipeg, municipal ownership and operation of the electric utility have been quite successful. Hydro introduced and has maintained low levels of rates.

It has provided satisfactory service. Financially the utility has become a going concern.

Contrary to the expressions of some overzealous advocates of public ownership, however, low rates in Winnipeg are not the result of municipal operation alone. Actually a number of factors make for low-cost electricity. These include superior hydro-electric generating facilities, a cheap overhead distribution system, and a relatively low tax burden. In addition to these factors, which would have applied as much to a private company as to a public system, certain advantages of municipal operation and effective, publicly-minded management have combined to secure Hydro's present low rates.

The advantages of municipal operation include low interest costs, low administrative costs resulting largely from low salaries and the coordination of utility affairs with other municipal business, the absence of an inflated capital structure on which dividends must be paid, and the absence of unnecessarily large holding company fees. These advantages in conjunction with Hydro's active policy of stimulating consumption have probably resulted in giving Winnipeg users rates lower—to an extent, however, which cannot be clearly defined—than would have obtained had a private company served the city exclusively.

One cannot generalize from Hydro's success, however, and say that public ownership of utilities should be encouraged in all places and under all conditions. In Winnipeg, with effective management and relative freedom from partisan influences, the municipal electric system has yielded satisfactory results. Partisan-minded operation or incompetent management would have produced far different consequences. Unless absent elsewhere, the results of

⁷⁴ The total amount paid to the Winnipeg Electric Company for power supplied from September, 1928 through August, 1937 was \$2,714,137.

municipal operation are not likely to be gratifying.

A concluding comment should be offered in connection with Hydro's accounting. Because of its unusual classifications and the absence of complete published statements explaining its accounting procedure, the utility's true financial position is not indicated by its published financial records. A revision of accounting practice, following in so far as possible the uniform system of accounts prescribed by the Federal Power Commission in the United States would be desirable. Furthermore, although the city auditor provides a continuous audit of the utility accounts, his activities should be supplemented by periodical outside audits. This outside check is usually best performed by a state public utility commission. In Winnipeg, however, this would have to be

done by a reputable private accounting firm because the Manitoba Commission is not active in the regulation of electric utilities. Although it has been charged that sometimes private auditing firms do not thoroughly understand the specialized accounts with which they deal, and that they compromise somewhat with the truth in order to maintain their profitable business accounts, annual audits from outside the municipal family should supplement the work of the auditor appointed by the city council. This criticism is less serious in the case of Hydro, however, than it would be for most American municipally owned utilities, because the Canadian practice of appointing municipal administrative officers for long terms rather than electing them for short terms tends to secure a degree of expertness in administration often lacking in the United States.

Urban Land Department

MORTON BODFISH, *Editor*

Non-Conforming Use and the City Plan

THE non-conforming use was originally given widespread and liberal tolerance, because zoning was new and unfledged and its adherents did not wish to handicap it and endanger its future by exposing it to frequent litigation. Furthermore, private property rights are given vigorous protection in our courts and a tradition has been built up which jealously avoids any action which may be construed as a taking of property without due compensation.

Public opinion being what it was at the beginning of zoning, this attitude was probably necessary and justifiable. It is not so clear that this is the case today. Zoning has to a considerable extent become "respectable," although the technique generally speaking remains very inadequate, and in many cities is seriously if not entirely vitiated through poor administration.

Although much of the ineffectiveness of zoning may be laid to unscientific technique and lack of enforcement of whatever regulations are nominally in use, a wide area of the zoning field is exposed and vulnerable because of economic conditions far beyond the range and powers of local government and those charged with planning and zoning programs.

The characteristic attitude of the American public toward non-conforming uses is a reflection of its attitude toward city planning and zoning in general; to a considerable extent it is an attitude of indifference proceeding from lack of understanding of the objectives, functions, and general utility of community planning, of which zoning properly considered is, of course, an integral part.

This attitude can be changed, contingent partially upon an easing of the economic situation as reflected in increased prosperity of individual communities and upon a marked broadening in the public's comprehension and support of the objectives of city planning; and following upon these, improvements in techniques and in administration.

A review of the impact of economic conditions upon zoning, the effects of continual and unremitting clamor for "spot zoning" by the property-owning "voter" or his tenant would reveal important contributions toward sustaining an attitude of public indifference and even cynicism with respect to standards of property development or maintenance. Machine-politics in so many of our cities and the reflection in zoning practice of the local political "climate" are further important factors in the disintegration of old neighborhoods.

With return of a stable and normally productive economy and attendant increase in marketing and development of land, and with such activities conducted more realistically—in terms of what we know of trends and future characteristics of our population, in rates of land utilization, etc.—we will still need to obtain some improvements in the methods of valuing land for sale and for taxing purposes; ones which will tie in with the city plan and will be more in accord with the use to which land is or will be put. Not only do we need to allocate major land-use zones according to present and future need, based on planning studies and analyses, but we need a taxing policy which will penalize unwise, uneconomic, and destructive land use.

With a rational program of community land development before us and understood by the public, we may proceed without trepidation to attack the difficult problem of the non-conforming use.

Bassett,¹ a leading authority, claims

"there is little doubt that under zoning ordinances municipalities, if they wish, can succeed in ousting non-conforming uses and buildings. If the police power can be invoked to prevent a new non-conforming building because of its relation to the community health, safety, morals, convenience, and general welfare, it follows that the police power can be invoked to oust existing non-conforming uses."

Bassett cites the famous Hadacheck case which arose in Los Angeles before compre-

tion, and Court Decisions during the First Twenty Years (New York: Russell Sage Foundation, 1936).

¹ Edward M. Bassett, *Zoning: The Laws, Administra-*

hensive zoning had appeared. This is the case in which brick kilns were excluded from a residential district by means of a local ordinance based on California's home rule Constitution. The supreme court of California and the United States Supreme Court upheld the City's expulsion of the non-conformance. Also mentioned by Bassett are two New Orleans cases in which a drug store and a grocery store were required to cease operations and depart at the end of one year.

Amortization of non-conformance, in the instance of unimportant or merely accessory buildings, has been provided for in several Long Island local jurisdictions on the basis of a five-year period for billboards in residential districts. Automobile junk yards are given from three to six years to amortize. Marin County, lying across the Golden Gate from San Francisco, recently became the first county in California to adopt a comprehensive zoning ordinance under the new California Planning Act. The ordinance contains a retroactive provision affecting non-conforming junk yards and billboards. Non-conforming junk yards (including auto-wrecking yards) in business districts are required within one year to be enclosed in a building or within a solid fence, of which the plans have to be approved by the planning commission. Non-conforming junk yards in residence districts are required to move out within a year. All non-conforming billboards, wherever located, must be removed within six months.

The zoning ordinance of Dayton, Ohio, provides, in addition to other limitations on the extension of non-conforming uses, that "the extension or extensions shall in any case be undertaken within ten years after the enactment of this ordinance." H. W. Starick, Dayton city planner, says

"the provision is a compromise between ousting of non-conforming uses and the usual regulations found in practically all zoning ordinances. There can be no doubt that some court cases will arise from the strict enforcement of this provision, but it will not be enforced until 1942 and by that time zoning will have gained greater support by the public and in the courts."

The most recently reported move toward elimination of non-conforming uses was that expressed in the section struck, at the insistence of local interests, from H.R. 9844, which proposed revision of the zoning ordinance of the District of Columbia. The deleted portion appears under Section 7, as follows:

"The zoning commission may in its regulations, provide for the termination of non-conforming uses, either by specifying the period or periods within which non-conforming uses shall be required to cease or by providing a formula or formulae whereby the compulsory termination of a non-conforming use shall be so fixed as to allow a reasonable period for the recovery or amortization of the investment in the non-conformance."

The public's indifference to the hostility of the planners toward the non-conforming corner grocery, drug store, gas station, ice depot, and so on, is, I believe, to some extent justified. Unquestionably the public's convenience is often served by the proximity of neighborhood stores and miscellaneous service structures. On the other hand, it has been proved beyond question in cities throughout the country that single properties and groups of properties covering extensive areas have been injured by such non-conforming intrusions. The community has suffered; property values, neighborhood unity and stability, neighborhood amenity have declined.

The average American places "convenience" fairly high in the list, but I am not altogether convinced that he is as blind to aesthetic factors as is often claimed. Just as many cities have found it possible to educate citizens not to litter streets and parks, they can be induced to appreciate and demand planned convenience and amenity. Furthermore, I believe they will respond in a manner exceedingly gratifying to those public and private enterprisers who contemplate programs of community building, both in old areas and in new ones, following principles of contemporary city planning practice. I am advocating here integrated neighborhoods—the neighborhood unit—with well designed retail shopping centers provided with off-the-street car parks; and in the case of units of large area, perhaps their own parks and play fields, schools, community centers, and the like.

The National Resources Committee's zoning conference a year ago and the zoning experience observed and reported recently in planning periodicals seem to point out that progress in eliminating non-conforming uses, except such uses as auto-wrecking establishments and junk yards, billboards, etc., is almost negligible, and as a consequence the integrity of the zoning ordinance and of the city plan itself is threatened. Buttressing the calamity, as it were, "political" and inept administration is creating in many com-

munities through "spot zoning" a whole new crop of what are in effect non-conforming uses.

The community, to protect itself, must provide a comprehensive plan for its future development, into which zoning may be fitted and employed in its true role of one of the major devices for carrying out the plan.

City planning is the best tool available for re-forming the physical machinery of the modern city to accommodate it to its new functions and to gear into the city the technological changes which make for a more

orderly, economical, convenient, and productive municipal corporation.

The non-conforming use is an immediate and serious problem, though only a detail of the larger one of securing balanced and wisely controlled city development. Our cities find themselves with multiple and diverse land uses; it is up to citizens, officials, and planners to plan and construct cities which conform to their uses.

PAUL OPPERMANN

*Assistant Director,
American Society of Planning Officials*

Non-Conforming Uses Destroy the Neighborhood

THE average home builder or buyer in American cities has usually sought a location that is entirely "new." Most often a home site has been selected on the outskirts of the city. There is a universal psychology about having one's home in a "new" residential neighborhood, if the prospective owner has a choice in the matter. It may be lacking in grass, trees, and natural beauty; it may be in bad taste even, but if it is "new" it has a special appeal. On the other hand, a site for a new home in a well planned neighborhood that has been carefully protected by restrictions, where trees are full grown, where many good homes have been built, but which is 20 years or so of age, possesses a sales resistance that is difficult to overcome.

This condition is peculiar to American cities. There are many explanations for it. Great prosperity has been conducive to expansion and has placed a premium on newness. The smoke nuisance in certain cities of the Middle West has encouraged home builders or buyers to seek outlying areas, but this alone cannot account for a universal trend. Real estate operators have favored suburban development because it was more profitable. New suburban property "moved faster." Our public administrative agencies have even encouraged the suburban trend by offering various subsidies for the construction of utility services.

The long years of the depression seem not to have altered the situation. Must home ownership and home building be confined largely to the outskirts of cities? Has this become a fixed tradition in America?

If these questions can be answered only in the affirmative, as now they must, our American cities face far greater economic difficulties than they have yet encountered. If we would change the present trend, must we not look deeper for basic causes?

The thesis of this paper is that in the now familiar "non-conforming use" is found one of the most potent factors—if not the principal factor—which cause prospective home builders and buyers to seek newly developing suburban areas.

At a public hearing called to consider the adoption of a zoning ordinance one citizen stated that during his lifetime his family had built six homes, each successive home being farther removed from the city's center than the last, that each home had been well built but had to be abandoned because the environment of the neighborhood became objectionable as the result of the intrusion of non-residential uses. Each of the old homes was sold at a small sum compared with its original cost, and all but one were still standing.

This story caused the city plan commission to make an exhaustive study of non-conforming uses throughout the city's area. The study revealed a definite pattern. The older the neighborhood the higher the percentage of non-conforming uses. The oldest centrally located neighborhoods contained non-residential uses occupying approximately 15% of net block area. Midtown districts contained about 5% of net block area. As outlying districts were approached, non-conforming uses occupied less than 1% of net block area, while the newest subdivisions

usually contained no non-conforming uses.

The history of property development and of trends in property values in American cities is thus illustrated. It is a record of gradual abandonment and loss caused by inadequate protection of home environment. Studies of land use have revealed that an extremely small percentage of land in the older districts can be absorbed for commerce and industry. Granting that much can be said about adverse influence of classes of tenantry, such as racial groups objectionable to original occupants, the fact remains that our failure properly to protect neighborhoods has caused untold waste.

Even though older neighborhoods have lost their original character, there is no sound reason why many of them should not be reclaimed for residential purposes, particularly since 80% or more of the net area is still residential in character if schools, churches, and the like are included. To reclaim these areas, however, it will be necessary to reestablish confidence that the residential environment will be protected. This cannot be done if non-conforming uses remain. Once a new neighborhood has been invaded by a single non-conforming use, whether it came into existence before zoning or by "spot" zoning, a universal feeling develops that the neighborhood is "shot." The same lack of confidence will prevail in any attempt to rehabilitate a neighborhood that has once "slipped" if non-conforming uses cannot be eliminated.

Early attempts at zoning in such cities as Minneapolis provided for acquisition and removal of non-conforming uses by exercise of eminent domain. The supposition that non-conforming uses would gradually disappear, current when police power zoning was first undertaken, has proved to be an error. Some recent court decisions give hope that reasonable regulations for gradual elimination of non-conforming uses will be upheld.

It is impossible to predict what the courts

will say with respect to the elimination of non-conforming uses. There is very little doubt but what the courts would sustain elimination of non-conforming uses by eminent domain. This method has very great limitations, however, as was found in Minneapolis. The problem is as much one of city-wide significance as it is of local neighborhood concern. The logical method of approach would seem to be to place a time limit upon existing non-conforming uses, based on the character of the structure, its age, and the expenditures which have been made for structural alterations from time to time. Whatever is done under police power regulation must be "reasonable," for the courts will be quick to set aside regulations which are not reasonable. There should be a survey of the non-conforming uses in each city. This will disclose in part what types of regulations may be advisable. Perhaps in drafting regulations an assumption might be made of a 30-year life for frame structures, and a 60-year life for well built brick, or concrete structures. In addition to normal life expectancies, some allowance should probably be made in the interest of reasonableness. Thus, a frame building which is 15 years old might be given 20 years before removal is required. A substantial brick building 45 years old might be required to be removed within 20 years. Non-conforming uses of land where no structures are involved, such as junk yards or automobile grave yards, might be required to remove themselves within a one- or two-year period.

Whatever method is used, however, it is clear that if we are to plan and develop cities that are sound throughout all the urban area and where all property values can be protected and stabilized, we must learn how to deal effectively and fairly with the non-conforming use.

HARLAND BARTHOLOMEW

*City Planner,
St. Louis, Missouri*

California's Subdivision Control Sustained

IN 1935 California passed its revised Real Estate Act¹ which contained, among other things, significant regulations concerning the conduct of the subdivision business. These provisions have already been commented upon by the writer in this

*Journal.*² This legislation is once more in the public eye because its constitutionality has been upheld recently by the California Supreme Court. For the details of the legis-

¹ Monchow, Helen C., "New Departures in Subdivision Control," 12 *Journal of Land & Public Utility Economics* 417-8 (November, 1936).

² Laws 1935, Act 112.

lation the reader is referred to the statute or to the article just cited. For convenience, however, it may be stated that the law defines a subdivision, provides for the registration of subdivision property with the Real Estate Commissioner before any lots may be sold, and sets forth the information required to be filed at the time of registration.

The case which tested the constitutionality of this statute arose when one Robert H. Sidebotham subdivided certain lands in California and offered them for sale without registering them with the Real Estate Commissioner. The defendant admitted the charge but contended that he had not committed a public offense because the Real Estate Act was unconstitutional. In this contention he was upheld by the District Court of Appeal (Third Appellate District) of California in a decision rendered March 25, 1938.³

The Appellate Court held that the Real Estate Act placed "onerous and unreasonable burdens on the owners of real property" and arbitrarily restricted their "use and right to dispose" of their property. Because the Act benefited "individuals or classes of persons—namely, the 'proposed purchasers or lessees of the property'—it was not valid police power regulation, which should have as its object the *general* welfare. The cases relied upon to support this line of reasoning were drawn largely from the field of security regulation and had this opinion stood in the higher court it might have presented a serious obstacle to the application of so-called "blue sky" control to real estate transactions.

This was not the case, however, for appeal of the decision to the California Supreme Court brought a reversal of this stand in a

decision rendered December 13, 1938.⁴ The gist of that court's opinion is as follows:

"The assertion that this is not valid police power legislation because it benefits only a special class, the purchasers and lessees of subdivided real estate, and not the whole public, is without substance. The police power may be, and usually is exercised for the purpose of protecting particular classes of the public in need of such protection, and it is rare indeed that a single law includes everyone in the scope of its regulations. The object of the present law, prevention of fraud and sharp practices in a type of real estate transaction peculiarly open to such abuses, is obviously legitimate; and the method, involving investigation and disclosure of certain essential facts, and a protection for the innocent purchaser against loss of his land by foreclosure of the underlying mortgage, is perfectly reasonable."

This forthright statement should constitute a strong bulwark in the defense of this type of regulation. The oft-cited "tangible" nature of real property, in contrast to the reputed intangibility of securities, for example, is frequently advanced as a reason for not regulating its use and sale.⁵ The contention is that because of its tangibility the chances of fraud and misrepresentation are at a minimum. The contrary, in fact, seems to be the case. The very complexity of real estate transactions is sufficient reason for drawing adequate safeguards about the purchase and sale of such property. Besides, the widespread use of the land contract, particularly for dealings in subdivision property, has made the purchase of vacant land practically a transaction in securities. Consequently, it is essential that all instruments pertaining to such transactions shall set forth clearly and completely the exact nature of the interest which the purchaser is acquiring and the responsibility of the seller toward that interest.

HELEN C. MONCHOW

Of the Journal staff.

³ *In the Matter of the Application of Robert H. Sidebotham*, Criminal No. 1618.

⁴ *In the Matter of the Application of Robert H. Sidebotham*, Criminal No. 4169.

⁵ The minority opinion in the instant case states that "a security . . . stands in a different category from the sale of tangible property." It goes on to quote the

United States Supreme Court (*Hall v. Geiger Jones Co.*, 242 U.S. 539): "... the intangibility of securities . . . require and allow regulations concerning their sale different than those which may be applied to other property."

Land Resources Department

GEORGE S. WEHRWEIN, *Editor*

Recently Enacted Weed Control Legislation

DURING 1937 and 1938 only two completely new weed control laws were enacted—in Kansas and Washington. Other states merely added to existing lists of noxious weeds subject to control and eradication, or otherwise amended existing legislation so as to clarify or expand control procedures. The types of amendments enacted indicate the increase of noxious weeds; they have been spreading rapidly on state, county, and federal, as well as privately owned, lands. The strengthening of control measures is designed to cope more effectively with this menace.

New Laws

Kansas. Kansas enacted a law for the purpose of controlling field bindweed.¹ It imposes the duty on all persons, railroad companies, the State Highway Commission, boards of county commissioners, township boards, school boards, and other public bodies, as well as those supervising state owned lands, to control the spread of and to eradicate field bindweed and all other weeds which might be subsequently declared by the Legislature to be noxious. The procedure established directs the county assessor to ascertain the amount of land and highways infested with noxious weeds and transmit such information to the Secretary of the State Board of Agriculture and local governing bodies. When any landowner has failed to comply with the regulations promulgated under this act, the governing body may after notice enter his land, apply approved methods to control and eradicate the noxious weeds thereon, and assess the costs against the land.² Failure to comply is, in addition, made a misdemeanor and subject to fine upon conviction.

The State Board of Agriculture is empowered to adopt and publish methods of control and to set up rules and regulations to enforce such control.³

¹ Laws 1937, c. 1.

² Such costs may not exceed 2% of the assessed valuation in any one year (§7).

³ The Board is also authorized to make cooperative agreements with the Federal Government for control measures (§2).

The governing bodies of municipalities and counties may (with the approval of the Secretary of the State Board of Agriculture) employ a weed supervisor to organize associations in convenient areas for control of noxious weeds. The supervisor is directed to cooperate with the county assessor in locating infestations of noxious weeds, consult and advise upon control methods, and render assistance for the most effective control and eradication within the district (§3). The taxing body levies a tax (not exceeding one mill) sufficient to pay for its part of the cost of control and eradication. The costs of control and eradication along highways or lands controlled by a state department are to be paid from state funds; on lands of a county or local subdivision, by funds available for that purpose; and on all other lands, by the owner. Any person aggrieved by the assessment may, within 10 days from the mailing of the account, take an appeal to the county board of commissioners who then hold a hearing. An appeal to the district court of the county will lie from a decision of the county board (§8). The governing bodies, in cooperation with the State Board of Agriculture, are directed to purchase necessary extermination material to be sold to landowners at half cost; and equipment may be loaned at cost of operation.

Washington. The State of Washington enacted a weed extermination law to supplement an existing weed districting law. This old law had provided for the organization of districts⁴ for the control of weeds on agricultural lands only. The county boards are authorized, under the latter, to organize weed districts upon petition of freeholders of 50% or more of the acreage in the proposed district and after due notice and hearing. Directors are elected at a meeting called by the county board after notice. The directors of the district adopt rules, regulations, and methods to exterminate weeds, declared noxious by the State Department of Agriculture,⁵ and supervise and enforce such reg-

⁴ Not less than one section of land in area (Rem. Rev. Stats., §2771).

⁵ Amended in 1937. See p. 101 below.

ulations. A weed inspector may be appointed by the directors to carry out their rules, and to notify the prosecuting attorney of lands not complying and supply him with an estimate of the work and costs necessary to be performed upon non-complying lands. If the owners do not within 10 days after notice destroy the noxious weeds, the weed inspector may enter the land and destroy them himself. The costs of such eradication are then assessed as a tax upon the land. Detailed procedures direct the county boards to levy a tax to finance the general operating costs of the districts, the taxes upon publicly owned lands to be paid by the administering agency.

The new law, supplementing the districting law, establishes a more simplified and practicable procedure. It provides for the creation, by the boards of county commissioners and the director of the State Department of Agriculture, of weed extermination areas in which they are responsible for rules, regulations, and enforcement on all types of land. It authorizes the creation of a weed extermination area upon petition of the owners of 5% of the farms in a county. The board of county commissioners and Director of the State Department of Agriculture shall, after investigation and public hearing, create⁶ such an extermination area for the purpose of exterminating weeds classed by the Experiment Station as noxious, poisonous, or detrimental to agriculture or live stock. Thus the new law complements the old law by providing for destruction of weeds in any infested area regardless of the type of land and even though part or all of an established and functioning weed district may be embraced within it (§2). The State College and the Department of Agriculture are directed to cooperate with the county commissioners in publishing the names of noxious weeds, and information relative both to their growth habits and to methods of destruction and extermination. The county commissioners and the Director of Agriculture are directed to establish rules and regulations for destruction of weeds, but the directors of weed districts have final approval of any regulations applying to weeds upon crop lands within their jurisdiction. If noxious weeds are found growing or about

to go to seed upon crop land, notice shall be given to eradicate them in accordance with procedures in weed districts.

Costs of eradication shall be paid as follows: $\frac{3}{4}$ from the county weed control fund and $\frac{1}{4}$ by the landowner. However, on crop land the owner may be required to pay $\frac{1}{2}$; and, if the work performed is only prevention of seed production, the entire cost (§4). Whenever practicable the owner shall be employed to carry out the practices required (§3).

Amendments

Idaho, Illinois, Iowa, Montana, and Washington enlarged the lists of weeds declared to be noxious and subject to control,⁷ and also strengthened control features of existing legislation.

The Illinois amendment proclaims that "the presence of seeds of Canada thistle, or any other weeds named, in seed, hay or grain, shall be prima facie evidence of intent to disseminate such seeds so as to vegetate upon lands of this State." A strengthening provision was added to the Oregon Weed District Law to the effect that, if the weed inspector find that destruction is impracticable because the weeds are too far advanced in growth, he shall request the Department of Agriculture to quarantine the premises to prevent movement of infested crops or live stock except under control regulations prescribed in the quarantine order.⁸

Another group of important amendments relates to the power of the governing body or weed inspector to enter the land of non-complying owners and perform the necessary work. The Idaho amendment requires notice to all landowners, in place of only agricultural landowners as previously provided, to cooperate in control measures. In Iowa the boards of supervisors are authorized to order all weeds, other than "primary noxious weeds" along county roads or between fence lines, to be mowed by adjoining owners to prevent seed production. All the laws provide for entry by the governing body or

⁷ Idaho Laws 1937, c. 192; Illinois Laws 1937, H.B. 390, p. 488, H.B. 392, p. 8, H.B. 391, p. 485; Iowa Laws 1937, c. 131; Montana Laws 1937, c. 41; Washington Laws 1937, c. 193, Rem. Rev. Stats. 2771 (1937 pocket supp.).

⁸ Laws 1937, c. 451 (amending Code §18-2005).

⁶ Laws 1937, c. 194, Rem. Rev. Stats., §2778-11.

weed inspector upon failure to perform the destruction work; and the costs are assessed upon the lands, except that in Iowa written consent of the board of supervisors is required where such work exceeds \$25.00. The revision of the Idaho law makes the lien for work required by the county commissioners to be done on private land of equal priority with general tax liens. In those states providing for penalties or fines for failure to comply with the law, the fines range from \$10.00 to \$500.00. Oregon and Illinois direct that these fines be paid into the county weed control fund.

The Montana act authorizes the governing body of a drainage or irrigation district to expend district funds for the purpose of controlling perennial noxious weeds on private lands in cases where control by tillage implements is impracticable. New procedures established in Iowa provide for the head of the botany and plant pathology section of the Experiment Station, acting as State Botanist, to advise the Secretary of Agriculture in the latter's capacity as State Weed Commissioner. Upon recommendation of the State Botanist, the Secretary temporarily declares noxious such weeds as possess the characteristics of a serious pest. The board of supervisors of each county is to appoint county or township weed commissioners to supervise destruction and control of such weeds. Landowners are required to destroy weeds according to a program ordered by the county board upon recommendation of the weed commissioners, who in turn cooperate with the State Botanist and Weed Commissioner.

The Wyoming law now requires the commissioners of the pest control district to make an annual inspection tour to determine the progress of control measures.⁹ The revised Washington law directs the Agricultural Experiment Station of the State College, in place of the State Department of Agriculture, to classify the noxious weeds to be controlled within organized weed districts.

Appropriations

An appropriation of \$15,000 is made to the Oregon Department of Agriculture for

weed control on state lands and for cooperative noxious weed control work with individuals, counties, or the Federal Government.¹⁰ All necessary materials are to be purchased from this fund.

A fund of \$100,000 was established in Idaho to be prorated among the counties by the Governor for the purpose of purchasing materials and cooperating with the Federal Government in noxious weed eradication activities.¹¹ Another appropriation of \$4,000 was made for the use of the State Board of Land Commissioners to cooperate with federal agencies in weed eradication work upon public lands.¹²

Federal Legislation

Of interest in this connection is a bill (H.R. 9313) introduced into Congress on February 2, 1938 by Mr. Clark of Idaho to establish a system of federal benefits, enabling the several states to make more adequate provision for control and eradication of noxious weeds. The sum of \$25,000,000 is authorized to be appropriated for each fiscal year, to be prorated among the states complying with rules and regulations laid down by the Secretary of Agriculture, upon approval by him of adequate state plans. Such plans must provide for financial participation by the state and political subdivisions, provide efficient and adequate methods of administration, and require administrative agencies to make adequate reports. Not exceeding 5% of the funds available may be used by the Extension Service to establish educational, demonstration, and organization programs within each cooperating state. A Division of Weed Control within the Bureau of Entomology and Plant Quarantine is to be established to administer the program authorized under this Act, and an appropriation of \$50,000 is authorized for administrative expense for the next fiscal year. All lands owned by the United States located within the several states are to be subject to state noxious weed control.

H. A. HOCKLEY

*Legislative Analyst,
United States Department of Agriculture*

⁹ Laws 1937, c. 40.

¹⁰ Laws 1937, c. 451.

¹¹ Laws 1937, c. 207.

¹² *Ibid.*, c. 235.

Mobility and Farm Tenancy—A Rejoinder

IN a recent article in this *Journal*, Mr. B. O. Williams advanced and sought to substantiate the "major premise" that "excessive interfarm mobility leads to failure, and that no farmer can keep 'on the move' and succeed in his occupational pursuits judged by whatever standards of achievement one may wish to select."¹ The author then sets up six "standards of achievement" by which the highly mobile farmer appears to be inferior to his more stable neighbor. He maintained that (1) the "unstable" farmer does not gain an intimate knowledge of the "idiosyncrasies" of his farm; (2) "the mobile farmer will not, in all probability, build fences, construct drains and terraces, sow perennial grasses, and turn under cover crops to conserve and build up the soil"; (3) "the constantly moving farmer will not put out and care for fruit trees, or other long lived vegetation, such as forest settings, pecans, flowers, etc."; (4) "live stock will probably not be included as a main source of income in the program of the roving farmer"; (5) "it will probably be difficult for the farmer who is always changing farms to obtain adequate credit resources"; and finally (6) "the farmer who changes residence frequently will not identify himself or his family with the local institutions and agencies of community life." These considerations lead the author to the conclusion that "when the complexities of the farming problem, especially of the South, are untangled, and the net residues analyzed, it would not be at all surprising if the tremendous interfarm mobility should turn out to be a bed-rock factor in the limitation of success in the enterprise."

The essential line of reasoning of the author is this: "Tenancy *per se*" is not an unmitigated evil; rather, some of the characteristics of our present form of tenancy do not contribute to a healthy rural life. One of the worst faults of the existing tenancy system is the excessive mobility of tenant farmers. Tenant mobility can be considered a problem because it retards successful achievement in farming as measured by the six criteria previously listed. Since excessive mobility is "bad" because of its "bad" results, then "some method . . . should be devised that would lessen the impact of

this continuous shifting of residence on the part of farmers."

Since the author directed his discussion toward the interpretation of factual evidence, this rejoinder is concerned with an inspection of a line of reasoning and not with the analysis of factual information.

It is a matter of common knowledge that tenants move more often than owners and also that tenants are often more deficient than owners in regard to the six standards listed by Mr. Williams. Is, however, the high mobility of tenant farmers the factor which causes the six problems named? In answering this question it is essential to remember that the concomitant variation of two variables does not prove a "cause and effect relationship" between them. As applied to the analysis being examined, this means that, while the most mobile tenants might be most deficient in respect to the six criteria listed, yet this relationship does not necessarily mean that the high mobility is the *cause* of the six problems.

The cause and effect relationship between high mobility and the first of Mr. Williams' "reasons" is obvious. The longer a farmer lives on the same farm the more intimately acquainted he will become with its idiosyncrasies. This condition is doubtless of considerable importance in connection with the income of the individual tenant farmer.

With respect to the next three criteria or "standards of achievement," the causal relationship becomes strained and questionable. These three standards involve two essential weaknesses in the present tenancy system: (1) the lack of desire or incentive on the part of the tenant to take any permanent interest in the physical plant of the farm, and (2) the failure on the part of the tenant to follow a type of farming which must be based upon long-time plans. Thus the farms occupied and operated by tenants are subjected to soil erosion and depletion along with the dilapidation of farm buildings, fences, and other improvements. However, these conditions are the accumulated results of farm management decisions. Therefore, when the tenants, or the conditions of the tenants, are held responsible, the analysis inherently as-

¹ B. O. Williams, "Mobility and Farm Tenancy," 14

sumes that the tenants have considerable latitude in making the decisions of management; otherwise the analysis should more appropriately examine the desires and conditions motivating the decisions of landlords.

Although it is well known that a considerable proportion of southern tenants are closely supervised and are allowed to exercise very little initiative in the conduct of their farm business, this point will not be taken into consideration in order that Mr. Williams' implied assumptions may be met. In doing so we must keep in mind that we are confining our analysis to only those tenants who are comparatively free in formulating decisions on farm management and land use.

In attributing these tenancy problems to the high mobility of tenant farmers it appears that Mr. Williams has neglected to consider in his analysis several other factors which have a more fundamental bearing on them than does high mobility. Either Mr. Williams has failed to consider the influence of an insecure occupancy upon the conditions analyzed or else he has failed to differentiate between high mobility and insecure occupancy. Tenant mobility, as the author pointed out, is the interfarm movement of tenants, while "security of occupancy" refers to the subjective feeling on the part of the tenant in regard to the certainty with which he can predict his continued occupancy of the same farm. When considered in this way it appears that insecure occupancy has a more fundamental influence upon the management decisions of tenants than does their high mobility. Thus there would seem to be very little reason why the desire of two farmers to conserve the soil of their farms should differ if each expects to stay on his farm for a considerable period, even though one has lived on his farm but a year while the other had lived on his farm for 10 years. Moreover, there appears to be very little logical basis for saying that the managerial decisions of two farmers would differ if neither of whom knew but what he would have to move the following year, although one may have resided upon his farm for 10 years as compared with an occupancy of only two years for the other farmer. In a case of this kind, *foresight* is of considerably greater importance than *hindsight*.

It appears from a study of Mr. Williams' "interpretative" reasoning that he overlooked the influence of the lack of legal

equity which tenants have in permanent and semi-permanent farm improvements they have made on the land during their occupancy. By common and statute law agricultural tenants are not allowed to remove fixtures they have made at their own expense, nor can they require compensation for them from their landlords. Thus there is very little incentive to tenants to use their time or money for the making of such farm improvements as terraces, drains, or fences. It is entirely possible that an incentive to tenants in this regard could be provided by appropriate "compensation laws," without specifically attempting to slow up their high mobility. Likewise, it is entirely possible that mobility might be considerably reduced without increasing the desire of tenants to conserve the soil if these tenants were not secure in their stable occupancy. Thus it appears that any benefit of decreased mobility would flow from increased security of occupancy rather than from the increased stability.

The causal relationship between high mobility and the inclusion of live stock enterprises in the farm management plan is decidedly more direct than in the previous "standards" analyzed. Mr. Williams' statement that "live stock are difficult to move about" is well taken and is partially responsible for the small number of live stock on tenant farms. Evidently with regard to live stock Mr. Williams again overlooked the influence of the insecure occupancy under which most tenants hold their farms. It is also plain that the author disregarded the influence which the prevalence of crop-share leases in the corn and wheat belts, as well as in the South, has upon the number of live stock kept by tenants. Under the prevailing crop-share leases the only payment to the landlord is a share of the crop products; land and labor used for live stock are income lost to the landlord who is therefore reluctant to rent his land to tenants with large herds or to those who wish to develop a live stock herd.

In connection with the fifth "standard" of Williams' analysis, that of the inability of mobile tenants to obtain adequate credit, it should be pointed out that the analysis obviously does not apply to those areas in the South where the "furnishing system" is prevalent, since it makes little difference to the "furnishing merchant" or to the land-

lord whether the tenant has been on the farm he now occupies for one year or ten. It should likewise be pointed out that Mr. Williams' analysis fails to show how decreased mobility will increase the available "adequate" credit facilities in these areas. It is an almost obvious fact that merely to decrease interfarm mobility will do little to solve the credit problems of tenant farmers.

In presenting the effect of high mobility upon the lack of social participation among tenants, Mr. Williams evidently has failed to take security of occupancy into account or else has taken the term mobility to include an insecure occupancy. The influence of high mobility upon the social participation of tenant farmers is clearer than it is with respect to the making of farm improvements and the preparation of long-time farm plans. This is true because increased acquaintance with other members of the community is likely to bring about some measure of increased social participation. When considering the financial support contributed by

tenant farmers to community institutions, however, *security* of occupancy is more fundamental than mere *stability*.

This rejoinder to Mr. Williams' note has been prepared in an attempt to throw additional light upon an issue which has often been confused in the research literature of farm tenancy. If this analysis is sound, it illustrates the fallacy of the argument that the high mobility of tenant farmers is the "bed-rock factor in the limitation of success" in tenant farming. It further indicates the falsity of the belief that decreased tenant mobility alone will accomplish very much to correct either the personal or social problems of tenant farming. This means that public activity to improve the leasing system must encompass much more than those specific lines of approach enabling tenants to obtain greater stability.

J. A. BAKER

*Fellow, Department of
Agricultural Economics,
University of Wisconsin*

Public Utilities Department

E. W. MOREHOUSE, *Editor*

The Consolidated Edison Labor Decision

THE recent decision of the Supreme Court in the Consolidated Edison case¹ constitutes a landmark both in the history of public utility labor relations and in the development of utility regulation. It may be summarized briefly as follows:

1. The jurisdiction of the National Labor Relations Board over the Consolidated Edison Company and affiliates, which operate wholly within the State of New York but sell electricity to railroads and other industries engaged in interstate commerce, was upheld.
2. The Board's procedure, with certain minor exceptions, was held to be fair.
3. The evidence upon which the Board found that the companies had practiced coercion, discrimination, and discharge of employees in violation of the Labor Relations Act was held to be sufficient and the Board's order directing the companies to cease such unfair labor practices and reinstate with restitution of back wages the discharged employees was affirmed.
4. The NLRB was held to be without authority to require the companies to desist from giving effect to the contracts into which they had entered with the International Brotherhood of Electrical Workers.

The significance of the decision to students of utility problems can be explained most readily by discussing separately the labor aspects and the broader regulatory aspects of the case.

I. Labor Aspects

The Labor Board's order² grew out of charges, made in May, 1937 by the United Electrical and Radio Workers of America, a CIO affiliate, that the Consolidated Edison group were interfering with the right of their

employees to join the United and were lending active financial and other support to the International Brotherhood of Electrical Workers, an American Federation of Labor organization.

IBEW members had been employed on the Consolidated Edison system for many years but the management, like that of most other power companies,³ had steadfastly refused to recognize the Brotherhood. Following passage of the National Industrial Recovery Act in 1933, employee representation plans were established in each of the companies which were merged in 1936 into the Consolidated Edison Company. At about the same time, a labor organization known as the Brotherhood of Utility Employees was formed. Its leaders, themselves members of the representation plans, vigorously attacked the schemes as company-dominated organizations. Six of the leaders were discharged.⁴ Finding life as an independent union somewhat rough, the new unit, in 1936, became a local of the International Brotherhood of Electrical Workers. A year later its members became members of the CIO unit, the United, and the IBEW local was suspended by its international officers.⁵ Following the Supreme Court's April, 1937 decisions upholding the National Labor Relations Act,⁶ Chairman F. L. Carlisle announced the termination of the employee representation plans and recognition by the companies of the IBEW. He admitted that its membership among employees at that time was negligible but stated that the management pre-

Industry," 5 *Journal of Land & Public Utility Economics* 363-9 (November, 1929); "Collective Bargaining by Unionists in the Electric Power Industry," 6 *Ibid.* 142-56; and a longer study by the same writer, "Trade Unionism in the Electric Light and Power Industry," *U. of Ill. Studies in the Social Sciences*, Vol. XVI, No. 2 (1928).

⁴ 4 NLRB 83-107.

⁵ According to *The Radio and Electrical Union News*, the IBEW officers had removed the inefficient officers of the local and they and their followers joined the CIO in order to get revenge against the International.

⁶ The leading case was *NLRB v. Jones & Laughlin Steel Corp.*, 301 U.S. 1.

¹ *Cons. Ed. Co. of N.Y., Inc. and its Affiliated Companies, et al. v. National Labor Relations Board, et al.* (No. 19) and *International Brotherhood of Electrical Workers, et al. v. National Labor Relations Board* (No. 25), 83 U.S. Sup. Ct., Adv. Op. 131 (December 12, 1938). Opinion handed down December 5, 1938.

² *In re Cons. Ed. Co. of N.Y., Inc. and its Affiliated Companies, et al. and United Electrical and Radio Workers of America, affiliated with the CIO*, 4 NLRB 71-110 (November 10, 1937).

³ See *The Radio and Electrical Union News* (an IBEW periodical), December 23, 1938, p. 2; also Marsh, C. F., "Trade Union Activities in the Electric Power

ferred to deal with an AF of L union rather than with the CIO. Within two months, as the result of the Company's active support of the IBEW's organizing campaign, approximately 80% of the 38,000 eligible employees had become members of the AF of L unit and seven contracts were entered into between it and the Consolidated companies.⁷

The NLRB concluded that the companies had "deliberately embarked upon an unlawful course of conduct . . . which enabled them to impose the IBEW upon their employees as their bargaining representative and at the same time discourage and weaken the United, which they opposed."⁸ It ordered the companies to cease discriminating against the United, to reinstate the discharged leaders, and to desist from giving effect to the IBEW contracts.

The Supreme Court upheld the Board's order, except as to the invalidation of the IBEW contracts.⁹ It held that, if the Board intended to charge that the contracts were the fruit of unfair labor practices,

"it should have amended its complaint accordingly, given notice to the Brotherhood, and introduced proof to sustain the charge. Instead, it is left as a matter of mere conjecture to what extent membership in the Brotherhood was induced by any illegal conduct on the part of the employers. The Brotherhood was entitled to form its locals and their organization was not assailed. The Brotherhood and its locals were entitled to solicit members and the employees were entitled to join. These rights cannot be brushed aside as immaterial for they are of the very essence of the rights which the Labor Relations Act was passed to protect . . ."¹⁰

While on its face the decision seems to contain a measure of victory for employers, in that it affords them legal means of building up a collective bargaining system over which they can exercise considerable control, such a conclusion is subject to important limitations. In the first place, the methods by which large numbers of Edison workers were induced to join the IBEW instead of the United were condemned by the Court as illegal. Second, the Court's refusal to hold the

IBEW contracts invalid was attributable in part to defects in the Board's procedure, such as failure to give the Brotherhood and its locals legal notice, lack of any statement in the complaint that the contracts themselves constituted violations of the Act, and failure to hold an election to determine which union the majority of employees favored.¹¹ These defects will probably be remedied by the Board.¹² Finally, it must be recognized that the IBEW is a bona-fide labor organization and that it is in no sense a company union, even though its leaders were sufficiently opportunistic to accept the olive branch extended by the Consolidated management. Once it feels secure against the United in the New York City area, it will be just as strong as it has always been in its opposition to the companies, if the interests of its members necessitate such a course. Whatever the eventual outcome of the AF of L-CIO dispute in the power industry, the conclusion is inescapable that organized labor has become a potent force in this traditionally non-union industry when the companies supplying 97% of all electricity and 55% of all gas sold in the country's largest city enter into trade agreements with a union which has been trying to get a foothold in the industry with only spasmodic success ever since its birth in 1891.¹³ The Court's decision and the publicity incident to it will undoubtedly tend to accelerate the unionization of power and gas companies throughout the country. Obviously, of course, harmony between the IBEW and the United must be brought about eventually if stable labor relations in these utility industries are to develop.

II. Broader Regulatory Aspects

The Labor Board claimed jurisdiction over the labor practices of the Consolidated Edison group, whose operations are wholly intrastate, on the ground that interruption of operations would affect interstate commerce in two ways. First, it would disrupt the companies' purchases in interstate commerce counsel, claims that such changes can be made so easily that the decision really is a smashing victory for the CIO and that "it can give but cold comfort to labor organizations seeking to advance themselves at the cost of the workers by obtaining preferential treatment from employers." See *CIO News*, December 12, 1938, pp. 3, 6-7.

¹³ See Marsh, *Trade Unionism in the Electric Light and Power Industry*, op. cit. and *The Radio and Electrical News*.

⁷ 4 NLRB 87-94.

⁸ 4 NLRB 94, 107-10.

⁹ Justices Reed and Black, in a separate opinion, supported the Board in its belief that these contracts were invalid. (83 U.S. Sup. Ct., Law ed., Advance Opinions 148-151).

¹⁰ *Ibid.* at 145.

¹¹ *Ibid.* at 142-6.

¹² This view has been expressed by Charles Fahy, general counsel of NLRB. Lee Pressman, CIO general

of coal, gas-oil, copper, cable, and other commodities. Second, it would paralyze the interstate and foreign operations of such electricity-consuming services as railroads, navigation, post-office, telephone, telegraph, radio, airports, newspapers, Dow-Jones tickers, and the New York Stock Exchange. Moreover, disruption of such services would seriously affect the operations of many other businesses engaged directly in interstate commerce.¹⁴

Laying aside the question of whether the large purchases of supplies from other states would justify the Labor Board's jurisdictional claim, the Supreme Court approved the Board's argument that important instrumentalities of interstate and foreign commerce would be unable to operate if a labor dispute interrupted the flow of electricity from the Consolidated system to these agencies. "In determining the constitutional bounds of the authority conferred, we have applied the well-settled principle that it is the effect upon interstate or foreign commerce, not the source of the injury, which is the criterion."¹⁵

It may well be asked whether this decision, which extends the meaning of interstate commerce to include the intrastate sale of electricity to customers carrying on interstate and foreign commerce, will come to be thought of as the "Shreveport case" in the history of "local" utility regulation. The Court's citation in the Consolidated case of the Shreveport decision¹⁶ and other railway rate cases,¹⁷ in which federal intervention to protect interstate commerce from injurious intrastate operations was upheld, in view of the almost complete transfer of railroad regulation from state commissions to the ICC since those opinions were handed down, might be considered as encouraging a similar trend in electric and gas regulation.

Certain limiting factors, however, must be considered before any such conclusion can

be accepted. In the first place, the local nature of electric and gas utilities in contrast to the more extended character of railway service makes it improbable that the purely intrastate aspects of these services will ever shrink to as great a degree as intrastate railroad transportation has done. New York City's proximity to other states and to the sea as well as its great significance, as the nation's largest city and greatest port, in interstate and foreign commerce makes it unique rather than typical of American cities. This is significant in view of the Court's statement that the validity of federal control over intrastate activities is "left to be determined as individual cases arise."¹⁸

A second factor is that this proceeding was instituted before the New York Labor Relations Act became effective and no proceedings were taken under it concerning the unfair labor practices. While the Court holds that "the exercise of the federal power to protect interstate and foreign commerce from injury does not depend upon a clash with state action and need not await the exercise of state authority,"¹⁹ its accompanying statement that "for the present purpose, it is sufficient to say that there has been no exertion of state authority which can be taken to remove the need for the exertion of federal authority to protect interstate and foreign commerce"²⁰ might be construed as implying that the prior exercise of state authority might in such cases remove the need of federal action.

Finally, the Court appears to be concerned so exclusively with the need for federal prevention of *labor disputes* in utility enterprises—disputes which might disrupt interstate railways and other instrumentalities of interstate and foreign commerce—that it may be questioned whether the decision sanctions extension of federal power over the more prosaic business of regulating rates, service, accounts, etc. It appears to the writer, however,

case (298 U.S. 238) in support of their view. They criticized the majority's citation of the railroad cases on the ground that in each of these cases "the federal interference is shown necessary in order to protect national authority, interstate commerce, and interstate rates established under federal law." They emphasized that these cases "give no support to the idea that, in the absence of conflict between state and federal policy or regulation, Congress has power to control labor conditions in production or intrastate transportation." (*Ibid.* at 146-148.)

²⁰ *Ibid.* at 138.

¹⁴ 4 NLRB 78-83.

¹⁵ 83 U.S. Sup. Ct., Adv. Op. 137.

¹⁶ *Houston, E. & W.T.R. Co. v. U.S.*, 234 U.S. 342 (1914).

¹⁷ *Minnesota Rate Cases (Simpson v. Shepard)*, 230 U.S. 352 (1913); *Railroad Commission v. C.B. & Q.R. Co.*, 257 U.S. 563 (1922); *N.Y. v. U.S.*, 257 U.S. 591 (1922).

¹⁸ 83 U.S. Sup. Ct., Adv. Op. 137.

¹⁹ *Ibid.* at 138. Justices Butler and McReynolds, in a separate opinion, denied the Board's jurisdiction, citing the Schechter opinion (295 U.S. 495) and the Carter Coal

that thoroughgoing *federal* regulation of labor practices such as is made possible by the Court's decision in the Edison case and *state* regulation of the rates, service, accounts, and other phases of such concerns as the Consolidated Edison Company would be inconsistent, illogical, and confusing.

In spite, therefore, of the various limiting factors discussed above, it is indisputable that the Consolidated Edison decision not only affirms the claim of the National Labor Relations Board to jurisdiction over the labor relations of a large segment of the

"local," intrastate electric and gas industries but has also opened the way for considerable extension of the jurisdiction of such general regulatory agencies as the Federal Power Commission.²¹ It appears improbable, however, that the jurisdiction of state regulatory commissions over electric and gas utilities will be narrowed to anywhere the degree to which state control over railroads has shrunk since the Shreveport decision.

CHARLES F. MARSH

*Professor of Economics,
College of William and Mary*

²¹ Extension of the Federal Power Commission's jurisdiction would probably necessitate elimination by Congress of those provisions of the Federal Power Act (49 U.S. Stat. 847) which restrict federal regulation "to those matters which are not subject to regulation

by the States" and which deny the Commission jurisdiction "over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce."

Public Utility Financing in the Fourth Quarter and the Year, 1938

A. The Fourth Quarter

PUBLIC utility security flotations rose to approximately \$506 millions during the fourth quarter of 1938. This total compares with \$328 millions for the preceding three months' period and \$109 millions for the last quarter of 1937. In fact, the volume of public utility financing increased each quarter after the low of \$91 millions recorded during the third quarter of 1937.

Three months ago it was stated in connection with public utility financing during the third quarter of 1938 that "Increasing uncertainty during the latter part of the third quarter of this year with respect to the outbreak of war in central Europe undoubtedly operated to withhold offerings which might otherwise have been made."¹ The almost negligible amount of financing during September, 1938 was also noted. Following the so-called Munich peace, flotations rose to \$278,950,000 in October, 1938. A decline to \$79,530,000 followed in November, but a recovery to \$147,786,667 was registered in December, 1938. Only 11 offerings were made in October, however, against 16 in December.

Long-term debt obligations continued during the period under review to predominate

among public utility security offerings. Twenty-nine issues in this category accounted for \$485,649,600 (95.9%) of the quarter's financing. These figures, however, include five issues with serial maturities aggregating \$54,625,000. The remainder of the total for the period was made up of six stock issues aggregating \$20,617,067.

Refunding or redemption of other bonds and stocks and payment of bank and inter-company loans were the principal purposes for which proceeds from flotations were used. It may be estimated roughly that something less than \$30 millions represented additional new capital invested or to be invested in the public service industries. More than 1/2 this sum represents the \$15,331,500 of new capital raised by Commonwealth Edison Company in connection with the private sale of \$34,000,000 additional Series I First Mortgage 3 1/2% Bonds.

Twelve long-term debt issues for a total of \$115,040,000 were sold privately to institutional investors. In addition, \$500,000 principal amount from each of two additional offerings were so sold, thus bringing the total of private sales to \$116,040,000, exclusive of \$669,400 of the Commonwealth Edison Company Convertible Debentures which are discussed more fully below.

Long-Term Debt Financing. The details of financing in this classification may be summarized as follows:

¹ 14 *Journal of Land & Public Utility Economics* 469 (November, 1938).

PUBLIC UTILITIES DEPARTMENT

109

Item	Number of Issues	Amount
Public offerings, exclusive of serial maturities.....	13	\$349,984,600
Public offerings with serial maturities.....	4	19,625,000
Total public offerings.....	17	369,609,600
Private sales, exclusive of serial maturities.....	11	81,040,000*
Private sales with serial maturities.....	1	35,000,000
Total private sales.....	12	116,040,000
Total, all offerings.....	29	\$485,649,600

* Includes \$500,000 from each of two issues the balance of which was publicly sold.

The issues offered publicly are analyzed in detail in Table I except for the obligations scheduled to mature serially and one additional issue on which data are not at hand. Serial issues offered publicly consisted of:

\$10,000,000 Central Illinois Public Service Company 3½% and 4% Serial Debentures due December 1, 1939/48 offered in December at prices ranging from par to 102.93 and averaging 101.1119. Underwriters' commissions averaged 1.6119, leaving average proceeds of 99.50.

\$8,000,000 Michigan Consolidated Gas Company (formerly Detroit City Gas Company) 4% Serial Notes due August 1, 1939/48 offered in October at prices ranging from 97¼ to 103¼ and averaging 101. Underwriters' commissions averaged 1¼, leaving proceeds of 99¾.

\$1,375,000 Green Mountain Power Corporation 4¼% Serial Notes due January 1, 1940 and December 1, 1940/53 offered in December at prices ranging from 95¼ to 104 and averaging 101.291. Underwriters' commissions averaged 1.136, leaving average net proceeds of 100.155.

\$250,000 The Tunnel Water Company First (closed) Mortgage 4% Bonds due July 1, 1939/57 offered in October to residents of Colorado at prices to yield from 3% to 4%.

The 12 issues placed privately were:

\$35,000,000 Cities Service Gas Company First

TABLE I. SUMMARY AND ANALYSIS OF LONG-TERM DEBT ISSUES OFFERED PUBLICLY
(EXCLUSIVE OF SERIAL MATURITIES) FOURTH QUARTER, 1938*

Company and Issue (A)	Coupon Rate (B)	Principal Amount (C)	Maturity Date (D)	Month of Offering (E)	Offering Price† (F)	Offering Yield (G)	Underwriters' Commissions‡ (H)	Proceeds to Company† (I)	Estimated Incidental Expenses‡ (J)	Net Proceeds‡ (K)	Cost to Company‡ (L)
Public Service Co. of North'n. Ill. First Mortgage	3½	\$79,500,000	10-1-68	Oct.	103.00	3.34	2.00	101.00	0.35	100.65	3.47
The Ohio Power Co. First Mortgage	3½	55,000,000	10-1-68	Oct.	101.50	3.17	2.00	99.50	0.52	98.98	3.30
Wisconsin Electric Power Co. First Mortgage	3½	54,500,000	10-1-68	Oct.	103.50	3.32	2.00	101.50	0.55	100.95	3.45
Central Illinois Pub. Serv. Co. First Mortgage, Series A	3½	38,000,000	12-1-68	Dec.	100.50	3.72	2.00	98.50	0.32¶	98.18	3.85
Virginia Electric and Power Co. First & Refunding Mortgage, Series B	3½	37,500,000	9-1-68	Oct.	103.50	3.32	2.00	101.50	0.49	101.01	3.45
Michigan Consolidated Gas Co. First Mortgage	4	34,000,000	9-1-63	Oct.	97.50	4.16	2.50	95.00	1.18¶	93.82	4.41
Commonwealth Edison Co. Convertible Debentures	3½	25,566,600	7-1-58	Dec.	100.00	3.50	0.96	99.04	0.98	98.06	3.64
Consumers Power Company First Mortgage	3½	10,168,000	11-1-66	Dec.	104.50	3.01	2.00	102.50	0.63	101.87	3.15
Green Mountain Power Corp. First & Refunding Mortgage	3½	7,750,000	12-1-63	Dec.	101.50	3.66	2.00	99.50	0.55¶	98.95	3.82
Blackstone Valley Gas & Elec. Co. Mfg. & Coll. Trust, Series D	3½	4,000,000	12-1-68	Nov.	104.75	3.25	2.00	102.75	1.05	101.70	3.41
Michigan Associated Tel. Co. First Mortgage, Series A	4	2,800,000	11-1-68	Nov.	102.00	3.89	2.75	99.25	1.57	97.68	4.14
Arkansas Western Gas Co. First Mortgage, Series A	6	750,000	10-15-53	Dec.	97.50	6.20	5.00	92.50	3.33	89.17	6.91
Weighted Averages	3.54				101.88	3.44	1.98	99.90	0.58	99.31	3.50
Totals**											

* Exclusive of \$450,000 Platte Valley Telephone Corp. First Mortgage 4½% Bonds offered at 102.00% in November. Additional details not available.

† Expressed as a percentage of the principal amount shown in column (C).

‡ Computed on a bond yield basis using net proceeds per column (K).

§ An additional \$500,000 principal amount of this issue was placed privately.

¶ Pro rata share of expenses on two issues.

‡ Includes \$669,400 sold privately (after public offering). See text for discussion of the terms of the offering and explanation of the computations on this issue.

** Totals, which represent summation of actual amounts, are: principal amount, \$349,534,600; offering price, \$356,105,660; underwriters' commissions, \$6,937,860; proceeds to company, \$349,167,800; estimated incidental expenses, \$2,042,378; net proceeds, \$347,125,422.

Mortgage Pipe Line $3\frac{1}{4}\%$ and $3\frac{3}{4}\%$ Bonds due 1940/1954.

\$34,000,000 Commonwealth Edison Company First Mortgage $3\frac{1}{4}\%$ Bonds, Series I, due June 1, 1968, sold at 104. Net proceeds to the company after expenses were 103.50.

\$15,000,000 Connecticut Light and Power Company First and Refunding Mortgage $3\frac{1}{4}\%$ Bonds, Series H, due December 1, 1968, sold at 104.9124.

\$8,500,000 Washington (D.C.) Gas Light Company Refunding Mortgage 4% Bonds due September 1, 1963, sold at 101.

\$6,500,000 Indiana General Service Company First Mortgage $3\frac{3}{4}\%$ Bonds due August 1, 1968, sold at 101 $\frac{1}{2}$.

\$6,000,000 El Paso Natural Gas Company First Mortgage $3\frac{1}{4}\%$ Bonds due in 1953.

\$4,240,000 Brooklyn Edison Company, Inc., Consolidated Mortgage 3% Bonds due November 15, 1968.

\$2,100,000 Mississippi Valley Public Service Company First Mortgage 4% Bonds due November 1, 1963, sold at 101 $\frac{1}{2}$. Net proceeds of 99.729 were reported after commissions and expenses.

\$2,000,000 Columbus and Southern Ohio Electric Company First Mortgage and Collateral Trust $3\frac{1}{4}\%$ Bonds due in 1968 sold at par. Net proceeds were reported at 99.07.

\$1,000,000 Madison Gas and Electric Company First Mortgage 4% Bonds due April 15, 1960, sold at 109.876.

\$400,000 Oregon-Washington Telephone Company First Mortgage $4\frac{1}{2}\%$ Bonds due December 1, 1958.

\$300,000 Iowa Public Service Company First Mortgage 5% Bonds due in 1957.

The 12 issues analyzed in Table I represent \$349,534,600 or 69.0% of the total financing for the fourth quarter of 1938. The average coupon rate, offering price, yield, and cost figures computed in the table are among the lowest results found for those measures, computed quarterly, during any quarter of the past three years. The average yield of 3.44% exceeds that of 3.37% for the fourth quarter of 1936 and that of 3.40% for the second quarter of 1938 but no other quarterly average yields of the years 1936 to 1938, inclusive. The average cost figure of 3.59% compares with 3.51% for the fourth quarter of 1936 and with 3.58% for both the second and third quarters of 1938, but is lower than the averages in other quarters. In like fashion, the averages of 1.99% for underwriters' commissions and 0.58% for estimated incidental expenses are well within the range of those items during earlier quarters.

The largest flotation during the fourth quarter of 1938 was the issue of \$80,000,000 of Public Service Company of Northern

Illinois First Mortgage $3\frac{1}{2}\%$ Bonds of 1968. Of this issue, \$500,000 was sold to the trustees of service annuity funds of the company and Commonwealth Edison Company. The latter company, in turn, sold \$59,566,600 of long-term debt obligations during the quarter, thus continuing its refinancing program. As already noted, Commonwealth Edison Company sold privately an additional \$34,000,000 of its Series I bonds. Additional Convertible Debentures of the company were offered to stockholders (other than Commonwealth Subsidiary Corporation) of record as of December 2, 1938, on the basis of \$3.125 of debentures for each share of stock held. An aggregate principal amount of \$25,566,600 was issuable under this plan. Underwriters had agreed to take debentures not subscribed for by holders of the rights up to a total of \$24,500,000. However, \$24,897,200 were subscribed for through rights with the result that none was taken up by the underwriters. The balance of the issue (\$669,400) was retained by the company and sold to trustees of service annuity funds of the company and Public Service Company of Northern Illinois. Underwriters were paid commissions of \$245,000, representing 1% on the maximum amount which they had agreed to take. This sum of \$245,000 is equal to 0.96% of the total issue as recorded in Table I, Column (h). Because of the method of distribution, however, this rate for underwriters' commissions is not strictly comparable with those on the other public offerings. The average is accordingly reduced, as was true also during the second and third quarters of 1938 when comparable offerings of the same debentures were made.

Other Financing. Except for long-term debt obligations, the quarter's financing consisted of three issues of preferred stock and three small blocks of common stock. Union Electric Company of Missouri no-par \$5 Preferred Stock was offered in the amount of 130,000 shares (\$13,780,000) at \$106 per share under an arrangement whereby holders of the Preferred Stock Issue of 1922 (redeemed January 1, 1939) were granted a prior opportunity to purchase the new issue. Pennsylvania Power Company no-par \$5 Preferred Stock in the amount of 42,000 shares (\$4,242,000) was offered at \$101 per share. The third offering was 8,737 shares (\$795,067) of Public Service Company of

New Hampshire no-par \$5 Preferred Stock at \$91 per share.

In each case of common stock the shares were sold to the issuer's parent company. Commonwealth and Southern Corporation purchased or agreed to purchase 43,636 shares of common stock for \$1,200,000 from Consumers Power Company and 10,000 shares of common stock for \$300,000 from Pennsylvania Power Company. Michigan Associated Telephone Company sold 3,000 shares of its common stock for \$300,000 to its parent, General Telephone Tri Corporation.

Although not included in the volume of financing for the period under review, a number of substantial bank loans were announced by the companies in connection with other financing. In connection with its bond issue, Wisconsin Electric Power Company² reported a bank loan of \$14,500,000. In like fashion bank loans of \$10,000,000, \$4,000,000, and \$4,000,000 were announced by The Ohio Power Company, El Paso Natural Gas Company, and Virginia Electric and Power Company, respectively. The loans were largely at rates of interest ranging from 3% to 3½% and contained provisions for periodic repayments of principal over seven to ten years.

Three offerings not representing new financing were made during the quarter. That is, the securities were already outstanding and were offered by their holders or representatives. In this group were 375,000 shares of The North American Company common stock offered at the market plus brokerage, 170,000 shares of Southeastern Greyhound Lines common stock offered at \$19.50 per share, and \$550,000 of Western Utilities Corporation 6% Notes offered at 65.

B. Summary of 1938

The volume of public utility financing rose steadily throughout 1938 when measured on a quarterly basis although the trend was uneven on a monthly basis within individual quarters. The 1938 total of \$1,234 millions represents a gain of more than 50%

over the 1937 volume of \$803 millions but it is considerably short of the \$2,125 millions recorded in 1936. The rise in 1938 is attributable in part to improved market conditions, particularly in the market for securities a little below the very top grade, during the latter part of the year. In 1938, financing continued to be principally of a refunding or funding character with only a small fraction representing new capital.

A statistical summary of the number and volume of public utility security flotations during 1938 is given in Table II together with corresponding data for 1937. Reference to this table reveals first a very sharp rise in the volume of long-term debt issues sold privately. The number of such sales more than doubled and their volume increased more than six-fold. In other words, large issues were frequently placed directly with institutional investors without resort to public offering. In fact, 17 of the 49 private sales involved issues of \$5,000,000 or more and ranged up to \$35,000,000.

Short-term debt³ financing all but disappeared in 1938. This statement is subject to the modification that the use of serial issues increased in 1938. However, this type of financing was not important in either year in absolute terms.

The data in Table II indicate a rise in the number of stock offerings but a material decline in volume. The two years' data are not strictly comparable, however, as regards stock financing inasmuch as available information, although difficult to verify, indicates that a few small sales of common stock were omitted in 1937, whereas the 1938 compilation is more nearly complete in this respect. At all events, in 1938 preferred stock sales contributed but a small share of the year's financing and the common stock sales were principally additional shares taken by parent holding companies.

The 108 issues in 1938 ranged in size from \$70,425 to \$80,000,000 and averaged \$11,429,000 with a median of \$2,900,000. The corresponding measures (000's omitted) for the three preceding years are as follows:

	1935	1936	1937
Range.....	\$400 to \$73,000	\$96 to \$175,000	\$100 to \$130,000
Average.....	\$16,330	\$16,350	\$10,855
Median.....	\$10,000	\$9,000	\$2,025

² The former The Milwaukee Electric Railway and Light Company merged itself into the former Wisconsin Electric Power Company in October, 1938, and assumed the latter name.

³ Issues maturing in five years or less are classified as short-term. However, serial issues with maturities extending beyond five years are classified entirely as long-term.

Although offerings were a little larger on the average in 1938 than in 1937, neither of these years was as heavily weighted with big issues as was 1935 or 1936. The increase, both relative and absolute, in the smaller flotations is indicated by the fact that in 1938 exactly $\frac{1}{2}$ of the offerings were less than \$5,000,000 each and in 1937, 63.5% were under that level. Comparable figures for 1935 and 1936 are 28.2% and 36.9%, respectively. The trend in the size of offerings is indicated more clearly by the following condensed frequency distribution of the number of issues and their relation to total financing in each of the past four years:

Year	Amount per Issue (In millions)*			
	Less than \$1.0	\$1.0 to 9.9	\$10.0 and over	Total
1935				
No.	7	31	40	78
%	9	39.7	51.3	100
1936				
No.	10	59	61	130
%	7.7	45.4	46.9	100
1937				
No.	20	35	19	74
%	27.0	47.3	25.7	100
1938				
No.	28	43	37	108
%	25.9	39.8	34.3	100

* The upper and lower limits are given above.

TABLE II. VOLUME OF PUBLIC UTILITY FINANCING, 1937 AND 1938

Item	1937*		1938†	
	Number of Issues	Amount	Number of Issues	Amount
Long-Term Debt:				
Publicly offered (exclusive of serial issues)	31	\$612,354,000	38	\$ 874,690,100
Serial issues	2	5,020,000	6	27,625,000
Total publicly offered	33	617,374,000	44	902,315,100
Privately placed	22	46,079,000‡	49	302,542,000§
Total Long-Term Debt	55	\$663,453,000	93	\$1,204,857,100
Short-Term Debt:				
Publicly offered (exclusive of serial issues)	3	\$20,850,000	—	—
Serial issues	1	800,000	—	—
Total publicly offered	4	21,650,000	—	—
Privately placed	5	26,050,000	1	\$2,000,000
Total Short-Term Debt	9	\$47,700,000	1	\$2,000,000
Stocks:				
Preferred	9	\$92,013,874	9	\$23,235,692¶
Common	1	100,000	5	4,260,000
Total Stocks	10	\$92,113,874	14	\$27,495,692
Grand Total	74	\$803,266,874	108	\$1,234,352,792

* The 1937 data shown here are as published last year, *14 Journal of Land & Public Utility Economics* 75 (February, 1938). Information on a small amount of additional private and miscellaneous financing has since become available, but these items would not affect the year's summary appreciably.

† The 1938 data include three items which were not included in the quarterly reviews during the year—namely, \$1,000,000 Public Service Electric and Gas Company First and Refunding Mortgage 3½% Bonds of 1966 sold privately; 28,000 shares (\$1,960,000) of San Antonio Public Service Company common stock sold to a parent company, and 5,000 shares (\$500,000) of Central Maine Power Company common stock offered to stockholders. The 1938 figures exclude a few small issues on which inadequate data are available; all such items were mentioned in footnotes to the quarterly summaries of utility financing.

‡ This figure includes \$2,500,000 representing the privately placed portion of one issue sold to the public. The 22 issues, however, are exclusive of this item.

§ This total includes one issue in the amount of \$1,265,000 which was a maturity extension (unextended bonds were sold privately). In addition, the total includes \$4,450,000 representing the privately sold portions of four issues offered largely for public sale; however, the count of the number of issues does not include these four items.

¶ Includes one offering of units of preferred and common stocks.

These data reflect a marked increase in offerings of less than \$1,000,000 each and a corresponding decrease in those over \$10,000,000.

Comparative weighted averages of the selling terms and cost of the long-term debt issues offered publicly during the past three years are presented in the following tabulation:⁴

Item	1936	1937	1938
Coupon rate.....	3.63%	3.61%	3.56%
Yield at offering price...	3.55	3.58	3.48
Cost to issuer.....	3.73	3.75	3.64
Offering price.....	101.47	100.64	101.36
Underwriters' commissions.....	2.17	2.04	1.92*
Gross proceeds.....	99.30	98.60	99.44
Incidental expenses.....	0.69	0.67	0.63
Net proceeds.....	98.61	97.93	98.81

* Exclusive of the \$104,148,100 of Commonwealth Edison Company Convertible Debentures, this item was 2.04% in 1938. See Part A of this review for a discussion of the effect of this debenture financing on this item.

From these data it may be observed that yields and costs fell slightly from the level of the two preceding years. After adjustment for the Commonwealth Edison Company Convertible Debentures, the rate of underwriters' commissions remained the same as in 1937. In all three years, estimated incidental expenses held within a narrow range but displayed a slightly downward trend. Since these measures are weighted averages, the large issues exert a controlling influence on the results. Underwriters' commissions and incidental expenses in particular run considerably higher on small issues.

C. Principal Financial Operations in 1938

Commonwealth Edison Company. The financing undertaken by this company was by far the outstanding operation during 1938. The company's three offerings of Series I first mortgage bonds together with three offerings of convertible debentures totaled \$204,148,100, or 16.5% of the year's total. In addition, Edison's subsidiary, Public

⁴ Serial issues are excluded from the computations as are a very few small issues on which incomplete data are available. Strictly speaking, the averages for offering price and proceeds are significant only when related to coupon rate and term, and to the type and character of the security, considered broadly. The averages for yield

Service Company of Northern Illinois, sold \$80,000,000 of first mortgage bonds.

The sale of the Series I 3½% bonds of June 1, 1968, may be summarized as follows:

Amount	Month	Price	Yield	Net Proceeds	Cost
\$ 33,000,000	June	102¼	3.38	99.69	3.52
33,000,000	Aug.	103½	3.32	101.06	3.44
34,000,000*	Nov.	104	3.29	103.50	3.31
\$100,000,000					

* Sold privately.

The \$104,148,100 of 3½% convertible debentures of July 1, 1958 were offered at par to stockholders through three separate issues of rights. A total of \$101,011,400, or 97.0%, was subscribed for by the exercise of the rights. The balance of the debentures was sold by underwriters and the company.

The Edison financing was devoted to the simplification and consolidation of the financial structure of the Edison system. The company's program contemplates the acquisition by Edison of all stocks of the principal units of the system and the elimination of the major portion of the publicly held debt of those units. Space does not permit a detailed review of the transactions, but the following summary lists the principal purposes to which the 1938 financing was devoted:

1. Redemption of \$66,000,000 of Commonwealth Edison Company Series A, B, C and D 4¼% and 5% bonds;
2. Redemption of \$19,858,500 of Super-Power Company of Illinois 4¼% bonds (Series of 1928 and Series of 1930) representing all that company's funded debt;
3. Redemption of all (\$19,429,000) 5¼% Debentures of Commonwealth Subsidiary Corporation;
4. Redemption of all publicly held preferred stocks and funded debt of Illinois Northern Utilities Company;
5. Redemption of all funded debt and preferred stock of Chicago District Electric Generating Corporation;
6. Redemption of \$29,410,000 of 4¼% and 5% bonds (three series) of Public Service Company of Northern Illinois; and
7. Repayment of \$6,300,000 of Edison's bank loans.

In order to consummate the redemption of the subsidiary companies' securities, Edi-

and cost, of course, take the coupon rate and term into consideration. In addition, since the financing upon which the computations are based consists mainly of high-grade, long-term mortgage bonds, the other measures are presented as general indications of trends.

son made the funds raised by it available to the subsidiaries through a number of intercorporate loans and security purchases. In addition to the security retirements listed above, Commonwealth Edison Company procured more than \$15,000,000 of new money by means of its 1938 financing.

Appalachian Electric Power Company sold \$57,000,000 of First Mortgage 4% Bonds and \$10,000,000 of 4½% Debentures. Proceeds were devoted to retirement of all except \$4,000,000 of the company's funded debt previously outstanding.

Consolidated Edison Company of New York, Inc. sold \$30,000,000 of 20-year 3½% Debentures and \$60,000,000 of 10-year 3½% Debentures. Proceeds from the first issue were reserved principally for additions and improvements made or to be made subsequent to January 1, 1937. The larger issue was used to refund a like principal amount of 20-year 4½% Debentures of 1951.

The Ohio Power Company's \$55,000,000 of First Mortgage 3¼% Bonds together with proceeds from \$10,000,000 of bank loans were used to redeem \$58,455,500 of Series B and D 4½% and 5% Bonds and to repay open account debt due to a parent company, except that a small sum was added to treasury funds. In this operation, the company refunded all but \$2,000,000 of its funded debt.

Public Service Company of Northern Illinois, as already noted, sold \$80,000,000 of First Mortgage 3½% Bonds in order to redeem its Series D, E, F and I 4½% Bonds of the same total principal amount.

Wisconsin Electric Power Company's \$55,000,000 3½% First Mortgage Bond issue together with proceeds from a \$14,500,000 bank loan furnished funds for redemption of the funded debt (\$66,875,000) of the two predecessor companies. (See footnote 2, *supra*.)

Bell Telephone System. Four units in the Bell System participated in 1938 financial operations. The Mountain States Telephone and Telegraph Company issue of \$30,000,000 30-year 3¼% Debentures permitted the

company to repay approximately \$4,000,000 of demand notes held by the trustee of its pension fund, repay \$22,900,000 of advances from American Telephone and Telegraph Company, and add roughly \$3,000,000 to current cash. Early in 1938 New England Telephone and Telegraph Company sold privately \$20,000,000 of First Mortgage 3½% Bonds. Pursuant to the sale of \$30,000,000 of First and Refunding Mortgage 3% Bonds, Series C, Southwestern Bell Telephone Company redeemed all its 7% preferred stock outstanding in the amount of \$21,785,500 and repaid \$4,140,000 of advances from the parent company. Southern New England Telephone Company, a licensee of A. T. & T. Co., sold \$8,000,000 of 3¼% Debentures privately and used the proceeds to repay \$5,200,000 of other obligations and to increase its cash position.

*D. Comparison of January, 1939 Market Prices with Original Offering Prices of Issues Floated in 1936, 1937, and 1938**

The principal flotations of public utility long-term debt issues during the past three years were in an exceedingly favorable position marketwise in January, 1939⁶ in relation to original offering prices. Out of 88 flotations analyzed, only 10 were quoted below original offering prices and of these only six had fallen as much as two points or more and only two were down more than seven points. These two cases, however, revealed a very decided depreciation as may be seen from the accompanying tabulation.

The 78 flotations that improved in market price are of unusual interest because of the amount of rise. Reference to the tabulation reveals that a large majority rose four points or more despite the fact that the issues were in the main offered originally at a premium. It is also of interest that 52 issues were quoted above the current call price.

The results of the amount of change in January, 1939 from original offering prices may be summarized as follows:

offerings represented additional amounts of an identical series previously offered.

* Prices used are sales on the New York Stock or Curb Exchanges as of about January 18, 1939, or over-the-counter bids where actual sales prices were not available.

* This analysis is based upon 88 offerings during the three years representing all public offerings of \$10,000,000 or more of long-term debt issues exclusive of serial issues and the three offerings of Commonwealth Edison Company convertible debentures. The 88 offerings cover 84 separate issues inasmuch as four of the

Amount of Change (in points)	Number of Increases	Number of Decreases
Less than 1.0	2	2
1.0 to 1.9	1	2
2.0 to 2.9	5	0
3.0 to 3.9	4	2
4.0 to 4.9	19	1
5.0 to 5.9	15	0
6.0 to 6.9	10	1
7.0 to 7.9	11	0
8.0 to 8.9	6	0
9.0 to 9.9	3	0
10.0 to 10.9	1	0
11.0 to 11.9	1	0
12.0 and over	0	2*
Total	78	10

* Actual values: 26 3/8 and 30 3/8.

In comparison with the results of a similar analysis made a year ago,⁷ the data above

⁷ 14 *Journal of Land & Public Utility Economics* 76 (February, 1938).

reflect a marked improvement during the year in the market for high-grade, long-term utility securities. A year ago, 26 out of 50 issues had declined in price, the drop exceeding two points in 12 cases. Of the 24 issues that had risen in price, only nine gained more than two points.

The price comparison made here obviously does not reveal the fact that many more than 10 issues at times have sold below original offering prices since their flotation. Space does not permit a tabulation of such results here but price performance by individual issues in the electric and gas utility industries has been tabulated by the Securities and Exchange Commission, Public Utilities Division, in a report entitled "Security Issues of Electric and Gas Utilities, 1935, 1936, 1937, 1938," dated January 7, 1939.

E. D. OSTRANDER

*Supervisor, Rates and Research
Section, Illinois Commerce Commission*

Notes on the Determination of Obsolescence of Turbo-Generators in Rate-Case Valuations

IN MOST electric rate cases it is necessary to make a determination of the accrued depreciation of the turbo-generators used by a company for generating its electric current. So far as investment is taken as the basis of value, the logical approach is to deduct the amount of depreciation or amortization which has been collected out of rates through the medium of charges to operating expenses. As applied to reproduction cost, however, the determination is usually made by engineers based upon inspection and such other factors as the particular engineer may consider to be appropriate, the final result being, usually, based to a large extent on "judgment."¹

One of the factors which obviously should be taken into account in such a determination and which most valuation engineers profess to take into account (although it is frequently not discernible in the result) is obsolescence. A frank statement on this subject was made by Maurice R. Scharff, a consulting engineer of New York who has done a good deal of work for the utility companies, speaking to the National Accounting Conference of the Edison Electric In-

stitute at Detroit, Michigan, on November 9, 1937:

"Engineering studies of obsolescence must frankly and fully recognize actual progress in the arts, and must develop methods of measuring the resultant loss in value by evaluating the present worth of the savings in expense, the improvement in quality of service and the increase of safety or reliability that would result from the utilization of the most efficient available modern equipment." (*Edison Electric Institute Bulletin*, December, 1937, p. 497.)

In the case of turbo-generators it is a relatively simple matter to determine at least a portion of the obsolescence by comparing the cost of fuel per kilowatt-hour for a particular turbo-generator with the cost of fuel "that would result from the utilization of the most efficient available modern equipment." Obviously the savings will depend very largely upon the extent to which the turbo-generator is used or is assumed to be used. The actual use may vary from 90% or more for the latest type of equipment to 10% or less for old machines. Clearly the answer we will get if we assume 90% of use will be very different from the answer which we will get assuming 10% of use. A simple example will illustrate:

Assume a fuel cost of \$.004 per kwh. for a particular turbo-generator as against a cost

¹ The writer inclines to the view that more equitable results are arrived at by the determination of accrued depreciation on a straight-line, age-life basis.

of \$.002 for the most efficient available modern equipment. If a turbo-generator is used 50% of the time, it will generate for each kilowatt of capacity 4,380 kwhs. in a year. The excess fuel cost of \$.002 per kwh. will thus amount to \$8.76 per kw. per year. If the same generator is relegated to stand-by position and is used only 5% of the time, it will generate for each kilowatt of capacity only 438 kwhs. in a year and the saving in expense which would result from substitution of the most efficient modern equipment would be only \$.88 ($438 \times \$.002$) per kw. per year.

That raises the question as to the proper basis to be used for determining the savings in operation which are in turn an important measure of the extent of obsolescence. The writer's opinion is that the only reasonable basis is to assume an average or normal use of generators in determining obsolescence for purposes of valuation. That is equivalent to saying that we assume that each turbo-generator will be used its share of the time. The argument is frequently heard that because the older generators need merely to serve as stand-by equipment and are used a relatively small amount during the year, the efficiency of operation is unimportant in the determination of accrued depreciation. This argument is plausible but will not bear analysis. On that theory an old turbo-generator would receive a higher valuation merely because it is used only a few hours in a year. While it is perfectly true that the old and relatively inefficient machine may fulfill its function as stand-by equipment with entire satisfaction, that does not mean that the old machine is worth more than it would be worth if it were being used to a normal extent. It is obviously absurd to say that a machine increases in value when it reaches the point where it has to be relegated to stand-by use in favor of newer and more efficient machines. We think it is self-evident, therefore, that the loss in value attributable to obsolescence as measured by fuel cost per kilowatt-hour must be based upon normal or average usage and not upon a limited actual use of the individual turbo-generator. Of course, this does not mean that

the turbo-generator ought to be replaced by the utility as long as it will serve satisfactorily its function of stand-by or auxiliary equipment. It merely means that the value of the old and inefficient turbo-generator serving as stand-by equipment, even though in good physical condition, is relatively low, largely because of the fact of obsolescence.

Having discussed the basis upon which the fuel saving should be determined, we now come to the question of converting annual saving into terms of value or percentage of obsolescence.

Mr. Scharff in the paragraph quoted above refers to "methods of measuring the resultant loss in value by evaluating the present worth of the savings in expense." Apparently he is thinking of the rather elaborate formulas used by engineers to determine the point at which it is economically desirable to replace a machine.² Such a computation must of necessity take into account and be based upon the actual use to which the machine is expected to be put. We have already seen that this is not a sound basis for determining valuation as such. It seems to the writer much simpler to approach the problem for valuation purposes from the opposite direction, and to determine directly the maximum present value. The method will be illustrated by the following example:

Assume that we have a turbo-generator 20 or 25 years old with a cost of fuel under normal operation of \$.004 per kwh., and that a new modern turbo-generator can be installed for \$100 per kilowatt of capacity (including the turbo itself, together with the necessary land, buildings, boilers and accessories) which will have a fuel cost under the same operating conditions of \$.002 per kwh. On the basis of a plant factor of 40%³ each kilowatt of capacity would generate, on the average, 3,504 kwhs. per year. The excess cost of fuel for the old turbo-generator under those conditions would be \$.002 times 3,504 kwhs., or \$7.00 per year. Now, if we assume carrying charges for depreciation, return, insurance, and taxes of 10 to 11% per year, the carrying charges per kilowatt of new capacity would obviously be

lent to an overall plant or capacity factor (ratio of average load to rated capacity) of 40%, with a reserve of 25% of the maximum load. On this assumption the equipment would operate on the average 40% of the time.

² Note for instance the "Wise-Retirement Formula" in Marston and Agg, *Engineering Valuation* (New York: McGraw-Hill Book Co., Inc., 1936), p. 86.

³ Many companies have about a 50% annual load factor with an 80% utilization factor. This is equivalent

\$10 to \$11 per year. Since the old turbo-generator would, on the assumed basis of use, cost \$7.00 per year extra for fuel, there would remain, on a comparable basis, only \$3.00 or \$4.00 per year for carrying charges on the old unit. If we capitalize the \$3.00 or \$4.00 per year on the same basis of 10 or 11%, we get a value of \$30.00 to \$37.00 per kw. for the old generator, quite apart from what it cost when installed, or what its reproduction cost may be estimated to be. This may be contrasted with valuations of \$75.00 to \$90.00 or more per kw. for cost new less depreciation frequently found in reproduction-cost estimates.

This approach to the determination of obsolescence is not, in the writer's opinion, a departure from the theory of reproduction of identical plant. It merely reflects in full the effect of one cause of obsolescence. Obsolescence must by its very nature be determined by reference to the latest type of equipment available to perform the same work.

This seems to be one case in which there is at least a possibility of determining the value of a portion of a utility plant without becoming seriously involved in the well-known circle which is inherent in most attempts to determine commercial or exchange value for utility properties. Exchange value depends principally upon future expected profits. In this case the savings in fuel, based on an average use, can be specifically stated in terms of dollars and

cents per year. We become involved in the circle only to the extent that the percentage of return enters into the overall percentage basis upon which the savings are capitalized. While this will make some difference in the result, it is not critical and, assuming that the cost of the newest and most modern equipment can be determined with some degree of accuracy, the maximum value of a turbo-generator can be determined within reasonable limits. It is the maximum value because it does not take into account other factors of obsolescence, such as improvement in quality of service and the increase in safety or reliability. Probably some additional allowance should be made for these factors of obsolescence, but no method of measuring them in mathematical terms is readily available.

We refer merely in passing to the question as to whether depreciation caused by physical wear and tear on the one hand and depreciation caused by obsolescence on the other operate concurrently or whether they are cumulative. The writer takes the view that, generally speaking, they operate concurrently. As regards turbo-generators the physical condition will usually be so much higher than the per cent condition as determined by obsolescence that the factor of physical condition will, except in special cases, be of minor significance.

WM. A. DITTMER

*Public Utility Consultant,
Illinois Commerce Commission*

The Report of the President's Committee on the Transportation Situation

THE special committee composed of representatives of railroad management and railroad employees appointed by the President to submit recommendations upon the general transportation situation made its report and recommendations on December 23, 1938.

National Transportation Policy. The report calls for the adoption of a definite national transportation policy providing for "impartial regulation of all modes of transportation, so administered as to preserve the inherent advantages of each."

Jurisdiction of the ICC. To carry out such a policy the committee recommends that regulation of all forms of transportation—rail, highway, pipe-line, air, and water—be

centralized in the Interstate Commerce Commission. In order to attain uniform and impartial administration by the Commission without preferring any mode of transportation, it is recommended that the statute require the Commission to organize along functional lines rather than to create divisions each having jurisdiction over a different mode of transport. The powers now vested in the Commission over finance, consolidations, new construction, abandonments, pooling, joint use of terminals, and the like, would be transferred from the Commission to a new agency hereinafter described.

The Rule of Rate-Making. Dissatisfied with the present "Rule of Rate-Making" in Section 15a of the Interstate Commerce

Act, particularly because it requires the Commission to consider "the effect of rates on the movement of traffic," the committee asks for a new and broader rule of rate-making applicable to all forms of transport. Phraseology for such a rule is suggested, but in language that is somewhat ambiguous.

The Long-and-Short-Haul Clause. The committee recommends repeal of Section 4 of the Interstate Commerce Act—the Long-and-Short-Haul Clause. This is in conformity with recent legislative efforts of the railroads, and reflects their desire to divert traffic from other forms of transportation by rate reductions without necessarily being required to justify those rates before the ICC.

Intrastate Rates. The committee holds that state regulatory authorities have at times caused much confusion through their failure to follow the lead of the ICC in general rate revisions, and that the present means of relief from this situation provided by Section 13 of the Interstate Commerce Act are cumbersome and cause delay in obtaining justifiable rate increases. The committee accordingly asks further extension of the Commission's powers over intrastate rates, and certain procedural changes in cases arising under this section of the Act.

Transportation Board. The committee recommends the creation of a new agency to be known as "The Transportation Board." The first duty of the Board would be to report to Congress concerning the relative economy and fitness of the several forms of transportation, the extent to which any are now subsidized, and recommendations for further legislation. After this task has been accomplished, the Board would be given control over certificates of convenience and necessity, abandonments, approval of security issues, consolidations, mergers, leases, acquisitions of control, and the like, as applied to all modes of transportation. The Board would also engage in research and promotional work relating to all forms of transport.

Reorganization Procedure. The committee expresses dissatisfaction with the procedure in reorganization cases under Section 77 of the Bankruptcy Act because of the duality of jurisdiction. This situation arises from the fact that both the Commission and the courts must approve of reorganization plans. To remedy this situation the committee recommends the creation of a special court

with exclusive jurisdiction over railroad reorganizations. This court would exercise the powers now possessed by the Commission and federal district courts over such reorganizations. The committee suggests that a requirement be written in the statute that no reorganization shall be approved unless fixed charges of the company are "in an amount which is within the ability of the property to earn at all times, as demonstrated by its past experience."

Railroad Consolidation. The committee ascribes the failure of the railroads to consolidate into fewer systems to two factors. Prior to 1920, consolidation was retarded by the prohibitions of the anti-trust laws; since 1920, by the provisions of Section 5 of the Interstate Commerce Act which require consolidations to conform to "a rigid plan developed in accordance with a prescribed formula." The committee accordingly recommends repeal of the provisions of the act which require consolidations to conform to a commission-made plan. All consolidations, however, would have to meet the approval of the Transportation Board.

Tolls on Waterways. The committee recommends legislation providing for "a fair and reasonable system of tolls" to be charged for commercial use of all inland navigable waters which have been improved and kept navigable at public expense. This policy is urged "in accordance with the broad principle that each mode of transportation should be required to pay its own way."

Waterway Improvements. The committee recommends that waterway projects should be undertaken only after a competent and disinterested tribunal has found such projects to have sound economic justification and therefore to be in the public interest.

Federal Barge Lines. The committee recommends immediate disposal of the properties of the federal barge lines operating on the Mississippi River and its tributaries.

Land-Grant Rates. Repeal of the reduced rate provisions of the land-grant statutes is urged.

Reparation. The committee recommends that proof of actual damage be required as a condition to an award of reparation to shippers who have been charged a rate found unreasonable. A shortening of the period for which reparations on past shipments may be required by the Commission is also recommended.

Tax Relief. Modification of certain tax

laws is urged in the interest of relieving the tax burden of the railroads. It is further recommended that railroads be relieved of the burden of contributing to the cost of eliminating highway grade crossings, and of the expense of altering or reconstructing bridges across waterways when this is required by the improvement of waterways or the construction of flood-control projects.

RFC Loans. Several recommendations are made regarding loans by the Reconstruction Finance Corporation to railroad companies. These include liberalization of the present loan provisions; provision for maintenance loans for a limited period of time to enable the railroads to make up the deferred maintenance which has accumulated during the depression years; and loans at low rates of interest and on easy terms for purchase of new equipment.

The above are the major recommendations of the committee. The committee is hostile to governmental efforts to bring about railroad "coordination," defined as "any form of unification of particular facilities or services of two or more railroads without unification of the railroads themselves." This is the railroad reply to efforts of the recent Federal Coordinator to interest the carriers in effect-

ing operating economies and improvements in service in this manner, and to the more recent recommendations for a Transportation Authority to facilitate and encourage coordination projects. "Coordination and pooling," says the committee, "constitute a field of study belonging to railway management and should not be made a governmental function."

Many of the recommendations of the committee have merit. Others are questionable, if not distinctly unwise. As might be expected from a committee composed as this one was, the proposals made are mainly ones that are in the interest of the railroad industry. The proposals of the committee should not be the basis of hasty action by Congress. Other carriers, as well as the various regulatory bodies affected, should be permitted to have their say. In the last analysis, however, it is the public interest, rather than the interest of the railroads, or the interests of their competitors, or the jealousies which may exist among different regulatory authorities and government departments, that should shape the course of legislation on this subject.

D. PHILIP LOCKLIN

University of Illinois

Book Review Department

Urban Land

Cornick, Philip H. *PREMATURE SUBDIVISION AND ITS CONSEQUENCES*. New York: *Institute of Public Administration*, 1938. pp. xxi, 346. \$1.50 (cloth). (Official Report, available from Division of State Planning, 353 Broadway, Albany, N. Y. \$1.00 (paper).)

In this study the author has attempted a measure of the extent to which land is subdivided in selected suburban areas in the State of New York in excess of the requirements of land for urban uses, the effect which this "premature subdivision of urban lands" has on the finances of local governments, the effect of premature subdivision on land use, and methods of controlling subdivision activities.

The study covers towns in the counties of Erie (Buffalo), Monroe (Rochester), Onondaga (Syracuse), and Westchester, and the City of New York.

An impressive mass of data has been gathered and analyzed. Toward this accumulation of data, the WPA and a number of public officials in New York State have made a contribution, as indicated in the author's preface. Without this cooperative effort, the author indicates, the study could not have been completed. So voluminous is the material necessary for this kind of study and so difficult is it to assemble from the numerous and scattered records, that the undertaking of the project was daring and its execution an achievement. The author is especially to be commended for his frankness with his readers in explaining the difficulties encountered in the study and the compromises with method to which he was obliged to resort in order to accomplish any results. In a study in which only a narrower margin of error in the results is tolerable, these compromises might have been significant and vitiated the study; in this case the character of the results is so obvious that further refinement in the accuracy of the final figures is by no means necessitated and the author's compromises with method appear to be justified.

This very frankness with his readers, however, militates against the effectiveness of his presentation. The effectiveness of the

study has been much reduced by the meticulous care with which the methodology has been set forth. The effectiveness of the tables and charts could be improved upon. But these strictures appear petty in the light of the contribution the study makes in the measurement of the significance of the problem attacked.

The results of premature subdivision on local governmental revenues and the efficient use of land resources of the community bear an appalling similarity from community to community and attain proportions which are disturbing. The key to the author's approach to the problem is indicated by the following quotation from Henry C. Adams:

"In new and rapidly developing communities there is always an opportunity for men who have secured an interest in the soil of a particular locality to make large sums of money if only the tide of immigration may be allured to come their way. The motives that lead men to select one spot as a home rather than another are frequently very slight, and sometimes without basis. A good pavement on the street, a fine schoolhouse, a public park, an imposing court-house, or any public work that indicates what business men call 'enterprise,' will be apt to prove more persuasive than the boast of a 'slow town' that her finances have been conservatively managed. Land agents must be furnished with fitting topics of eloquence; and if Nature has bestowed her bounties with equal hand, so that one locality is very like another, these subjects of discourse must be artificially provided. In this manner it comes about that the bonding of a town, and the expenditure of the money procured in showy works, is the occasion of actual gain to those who speculate in real estate . . .

"The mischief of such a procedure would not be so great if confined to a single town, but there is no reason why neighboring localities may not adopt the same tactics with the same end in view. In such a case, it is known that success depends upon the comparative excellence of the showing, and there consequently springs up local rivalry in the building of public improvements and in lending public credit to private corporations. It is true that this policy may be carried so far as to defeat itself, for the settler is not blind to the fact that the bonds of a city are an incumbrance upon any property he may acquire within its limits. But whether successfully managed or not, it results in a great increase of unnecessary debt, and it cannot be denied that many of our smaller cities and towns can trace the origin of their debt to the agitation of speculators in real estate. Indeed, we are fully prepared to accept the testimony of the Pennsylvania Commission of 1878, 'that the undue accumulation of debt in most of the cities of the State of Pennsylvania has been the

result of a desire for speculation on the part of owners of property themselves.' And in explanation of this it is added: 'Large tracts of land outside the built-up portions of cities have been purchased, combinations made by men of wealth, and councils besieged, until they have been driven into making appropriations to open and improve streets and avenues largely in advance of the real necessities of the city. In many of these cases, owners of property need more protection against themselves than against the non-property-holding class.'" (pp. 21-2, quoted from Henry C. Adams, *Public Debts*.)

The voluminous materials presented in the study give ample support to this statement and for the first time add precision to it.

The social significance of the study cannot be better expressed than in the author's last paragraph:

"The land of our fathers is also the land of our children. Upon us, as temporary trustees, devolves the duty of managing wisely and conserving well this basic heritage of the race. This volume is offered as a small contribution to an understanding of the manner in which we, of this generation, have to our own hurt failed to measure up to the responsibilities of our trusteeship." (p. 327.)

ERNEST M. FISHER

*Director, Division of Economics
and Statistics, Federal Housing
Administration*

Bassett, Edward M. **THE MASTER PLAN.**
New York: Russell Sage Foundation, 1938.
pp. 151. \$2.00.

The concept of the master plan is a product of our realization that all the various activities of a city (or other territorial unit) are so interrelated that the first, or at least an early, step in determining uses of the land is some general study of the city's future possibilities and activities and the allocation of future structures on and uses of the land as a guide for attaining the best social and economic values. Obviously, as every type of functional activity—communication, habitation, recreation, and so on—bears these interrelationships, every class of land use and every type of activity are appropriate elements of the plan. This community programming requires expression in both words and maps.

Decision as to whether this or that feature of the city's physical plant shall be constructed by public or private agencies and decisions concerning the legal status of definitely located lines or sites are part of the legislative or administrative process of carrying out the plan. But if the concept of plan-

ning be sound, obviously this carrying out should be preceded by at least some outlining and general description of the features of a development plan of the city.

Mr. Bassett limits and constrains this concept of a master plan to a degree which takes a good deal of life out of it. He excludes everything which is not placed upon a map. He specifies a very limited number of subjects for inclusion in the plan, excluding, for instance, such an important matter as housing. Except for zoning, he excludes all private uses, as, for instance, housing developments which may be carried out by private agencies, and private streets, though these may form part of the communication system of the city and usually become public streets sooner or later. In several places in his book he treats the giving of a legal status to exact street lines or exact park or other sites as the first step in the planning, though obviously the intelligence with which that step can be taken is dependent upon its being preceded by some general planning of the city as a unit, including other related functional activities.

Sprinkled throughout the book are many wise observations; for instance, if the master plan is to be a continuous and elastic guide, its making and adoption should be the function of the planning commission and not of the legislative organ. But there are also many statements which those experienced in the administration of planning know to be fallacious. To ascertain which of the statements are sound and which unsound would require one to go to sources other than this book.

Indeed, with the exception of the texts of statutes which Mr. Bassett incorporates within the covers of this book, the concept of master planning as pictured therein is rather elusive, uninspiring, almost incidental. Noteworthy, for instance, is that in the paragraph which relates to "design," the author speaks of the design of a street, the design of a park, but never the design of a city or other community.

In so far as they are genuine and have special meaning, the concepts or expressions "master planning" and "city planning" are identical; or at least we can have city planning only to the degree that we produce the master planning. We can make a street plan or a park plan or a zone plan as a separate or isolated study or decision with little if any regard to its relationships with the other

functional activities of the community; and in the exigencies of our hurried manner of living and all the pressures to which we are subjected, we cannot escape from proceeding with a good deal of construction and the doing of things without waiting for the master plan. The master plan should not be conceived of as a single text and map all produced at one time, but rather as a continuous process; but without it there is neither city planning nor the planning of any other territorial unit.

ALFRED BETTMAN

*Moulinier, Bettman & Hunt,
Cincinnati, Ohio*

Land Resources

Woodruff, Archibald M., Jr. *FARM MORTGAGE LOANS OF LIFE INSURANCE COMPANIES*. New Haven: Yale University Press, 1937. pp. xii, 204. \$2.50.

This is the seventh of the Daniel A. Wells Prize Essays to which Williams College has made the Award. Seniors and graduates of the College of not more than three years' standing are eligible for the prize. The author has spent most of five summers in the field collecting his material. This is significant because the book must necessarily be a study of others' experiences, and not drawn from a personal association with the making of farm loans over a long period of time.

The purpose of the book is to answer two questions: (1) Under what circumstances were farm mortgage loans of life insurance companies made? (2) How have they survived the economic crisis and depression following 1929? These two questions are answered, and in doing so a very clear picture of farm mortgage loans in general is presented—i.e., when they were made, why they were made, how they were made, and where, as well as the results to both mortgagee and mortgagor. This study also shows how government, both state and national, has at times played an important hand.

The book is divided into four parts. Part I describes the mortgage loan investment, how loans were made, lending history from 1910 to 1930, and the nature of the mortgage security. Part II deals with foreclosures and liquidation prior to and during the depression; also the handling of delinquencies and foreclosures by life companies and the effects of these actions on the companies. Part III

deals with depression legislation affecting mortgage investment. It outlines obstacles to liquidation in the form of popular violence, state moratorium acts, and the Frazier-Lemke Act. It also deals with aids to liquidation, such as the Agricultural Adjustment Act and federal refinancing of loans. Part IV presents briefly the author's summary and conclusions.

The book is very factual. It contains a good number of statistical tables and charts. Despite this, it is quite readable. The author has carefully listed all his sources of information, and one gains the impression he was very careful in assembling his data. To the person not directly interested in the farm loan field, this book will give an insight into the problems of this very basic and important field. The author has compiled and presented pertinent data which should be interesting and of value to persons in farm mortgage securities. The compilation work done by the author is by far the most outstanding part of the study.

EUGENE CARY

*Real Estate Department,
New York Life Insurance Co.,
Chicago, Ill.*

Public Utilities

Wilson, G. Lloyd, Herring, James M., and Eutsler, Roland B. *PUBLIC UTILITY REGULATION*. New York: McGraw-Hill Book Co., Inc., 1938. pp. xv, 571. \$4.

This volume is intended for college classes but the writers state (Preface, p. ix) that alone it will not fill the needs for a course in public utilities. Rather it is designed as a "companion volume" of the authors' earlier work.

The first half of the book is a conventional analysis of the problems of regulation, including chapters on pre-commission regulation, state versus local regulation, state commissions, accounting, rate regulation, valuation, fair return, depreciation, service, security issues, and holding companies. Apart from an outline of the 1935 holding company act and reference to a number of recent court cases, these chapters contain little that is new. The approach is primarily descriptive rather than critical and the reader will not find a great deal of economics in these chapters. Virtually nothing is found on the problems of differential rates and the rate structure, although these are of funda-

mental importance to public utility management and to regulatory authorities.

The central problem of regulation—namely, rate-base determination—receives only 32 pages while other questions such as the rate of return or service standards each receives almost as much space. This emphasis seems out of proportion. The chapter on valuation gives the arguments for and against historical cost and cost of reproduction and describes briefly the method of rate-base determination now in vogue. Three pages are devoted to intangibles including going value. These deficiencies are not corrected by use of the "companion volume" mentioned above.

Except for the final chapter entitled "Government Ownership" the last half of the book is devoted to a description of the increasing role of the Federal Government in public utility affairs. Here are found chapters on the Federal Government and public utilities, motor transportation, federal regulation of gas and electricity, national policy and the Federal Power Commission, federal power projects, rural electrification, and communications. The teacher will find these chapters to be useful summaries of recent events in the respective fields. As in the first half of the book, the approach here is descriptive. In fact, a goodly portion of the space is devoted to excerpts from statutes or summaries of recent laws. The reader would be benefited by more analysis of the achievements of the Federal Government in these matters. In the chapter on rural electrification the Committee of Utility Executives is quoted at length as stating that rural electrification faces enormous obstacles and this is followed by an equally long quotation from M. L. Cooke arguing for its success, but the authors make no attempt to separate the wheat from the chaff in both these arguments.

Water utilities and local transportation are touched upon only lightly here and there, but a whole chapter is devoted to intercity trucking; in the light of the organization of most college curricula this does not seem to be a sound emphasis.

Each chapter has a well selected list of references. There is a good index, but the footnotes could have been improved by the addition of dates to law journal and other periodical literature. Students of public utility regulation will find this volume of

considerable use with reference to recent federal developments.

EMERSON P. SCHMIDT

*Associate Professor of Public Utilities,
University of Minnesota*

Chantler, Philip. *THE BRITISH GAS INDUSTRY. Manchester: Manchester University Press, 1938. pp. xi, 141. 7s 6d.*

The gas supply business originated in England and on that score alone it is to be expected that a study of the British gas industry would be of interest. Has the gas business developed more rapidly there than in the United States or has it been handicapped by local conditions that do not exist here? There are many points of difference, and Mr. Chantler's work, which is an excellent study of the development of the gas industry in Great Britain and of the economics of gas supply in that country at the present time, is valuable because of the contrasts it presents.

Great Britain is essentially a one-fuel country. That fuel is coal. It is used in the raw state, or converted to gas or electricity. Each fuel has its field, just as in this country, and, as also in this country, gas faces a difficult marketing problem in maintaining its position against the competition of coal and electricity. There the similarity between situations ends. In Great Britain, regulation, price policy, and structure of the industry are entirely different. Mr. Chantler, after following the growth of the gas industry through its three phases, (a) beginnings, (b) economic expansion and technical progress (1850-1914), and (c) consolidation (1914-), describes the structure of the industry as it exists today. It is of interest to note that "combination gas and electric" companies are very few and unimportant in Great Britain. Furthermore, "municipal ownership" of the gas industry, negligible here, is quite prevalent there. Other principal topics discussed are the development and extension of public regulation and the price policy of the gas industry.

In the coal-gas business there is an important relationship between gas and coke, analogous to the "corn-hog ratio" of Middle West agricultural economics. This "gas-coke" relationship must be carefully studied if gas production is to be carried on at the most efficient level. This phase of the eco-

nomics of the British gas business is covered thoroughly.

In his conclusions the author recommends the formation of a body of gas commissioners with authority to hasten integration and co-ordination of the gas industry and to make sweeping changes in the price structure of the industry. It does not appear that the need for rapid integration of the gas industry is shown, although it must be admitted that the antiquated nature of the gas rates in general use is clearly shown. However, even for rate regulation, it is doubtful if commission regulation is the answer. In the United States promotional rate structures have been the result of managements' efforts, and not of those of commissions. Furthermore, Mr. Chantler's arguments show that the companies have been willing to adopt more promotional price policies but have had very little sympathy from governmental bodies where social aspects intervened as, for example, where the adoption of a promotional-type rate meant adoption of a service or "standing charge" which resulted in increasing price of service to smaller customers, many of whom are admittedly paying less than the out-of-pocket costs of service.

W. J. CROWLEY

*Lecturer in Public Utilities,
Northwestern University*

Miscellaneous

INDEX OF RESEARCH PROJECTS. *Washington: Works Progress Administration, 1938. Vol. I. pp. 291.*

This *Index* brings together for the first time specific references to most of the prodigious amount of research work undertaken throughout the country since late 1933 by the various federal work programs. Some 2,635 projects are listed, projects which, in the main, have involved the collection, analysis, and presentation of statistical data. Several hundred of these projects will be of interest to land and public utility economists. They cover a wide range of topics: natural resources, including land, water, minerals, and geography; planning (the *Index* lists some 17 projects concerned with local planning, but does not record the projects of state and national planning agencies); land

and agricultural economics; public finance; public utilities; various sorts of governmental research; and research in population, with an understandable emphasis on social problems and social adjustment. Two other volumes are planned for the completed index, one a summary of research projects operated under supervision or sponsorship of regional, state, and local planning organizations, and the other an annotated bibliography of material published under the auspices of the WPA Federal Writers Project.

Of particular interest is the vast amount of work which has been done in the rich and heretofore relatively untouched field of urban land. In addition to the planning studies, most of which deal with the analysis of land use for purposes of making much needed adjustments in zoning ordinances, there are the scores of real property inventories made in all parts of the country; the significant Financial Survey of Urban Housing; the Building Permit Surveys of the Bureau of Labor Statistics; a host of transportation and traffic surveys; much material on population; some on planning parks and playgrounds; and a considerable amount of data on taxation and public indebtedness. There are some errors in classification, some surprising omissions, but on the whole the *Index* gives a comprehensive and useful survey of what this phase of the Work Program has been doing.

It is to be hoped that wide use will be made of this research material, for many reasons. Anyone who is familiar with the difficulties under which the whole program has been conceived and executed will need no word of caution in his use of such statistical and research data as it has made available. Nevertheless, the extent to which the government will realize on past and future investments in these projects depends on the use made of the results. A critical evaluation of what has been accomplished, directed toward blocking out new, practicable, and socially significant studies, is perhaps the most timely and concrete contribution which economists can make both to the immediate problem of unemployment and to the larger problem of increasing the national income.

SCOTT KEYES

University of Wisconsin